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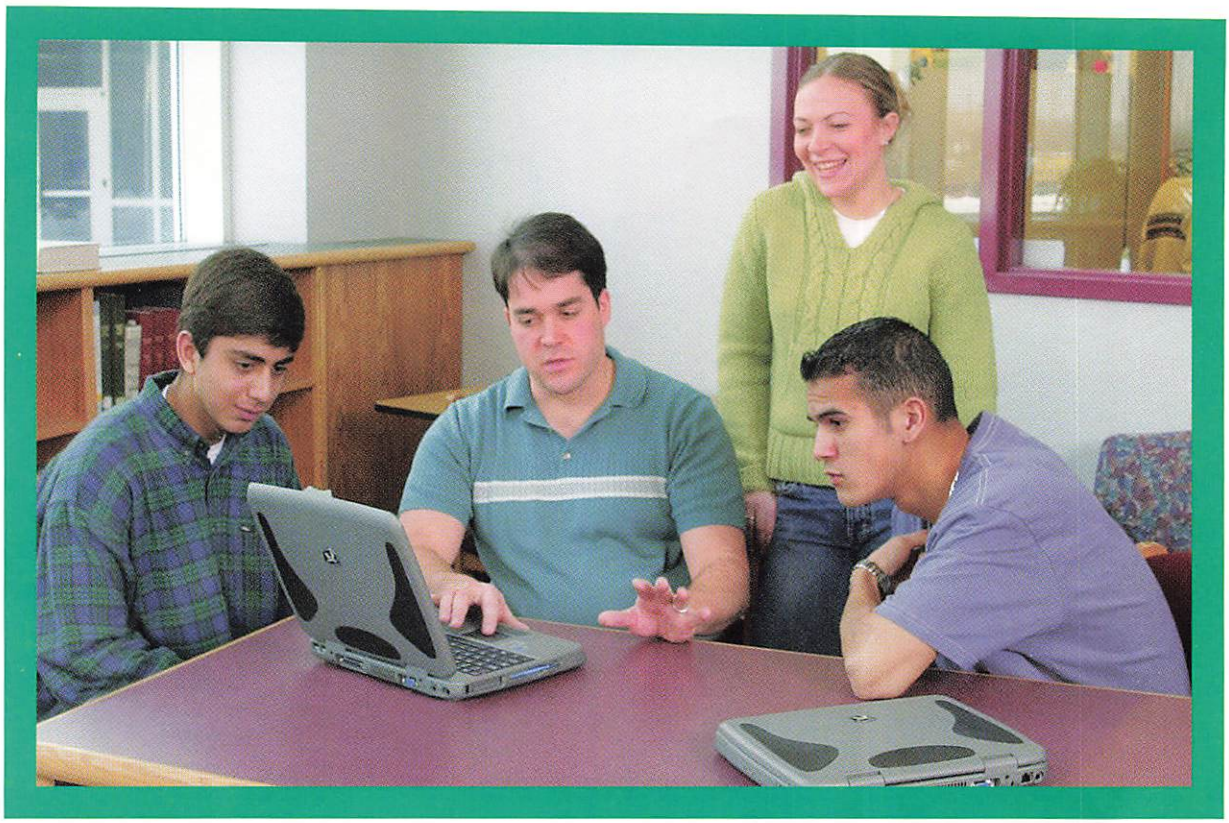
April — May 2002



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Jeff Mozdzierz
District Technology Coordinator
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"Do the students (and the teacher!) come out of the classroom more energized than when they go in?"

— Lynell Burmark, p. 8

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"There are three kinds of 'active': inactive, reactive and proactive. Only one leads to professionalism."

— Bernard Percy and Miriam Jones, p. 11

"The time has come for technology to move from the margins into the center of the educational experience."

— Greg Nadeau, p. 32

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Lou Fournier, p. 38

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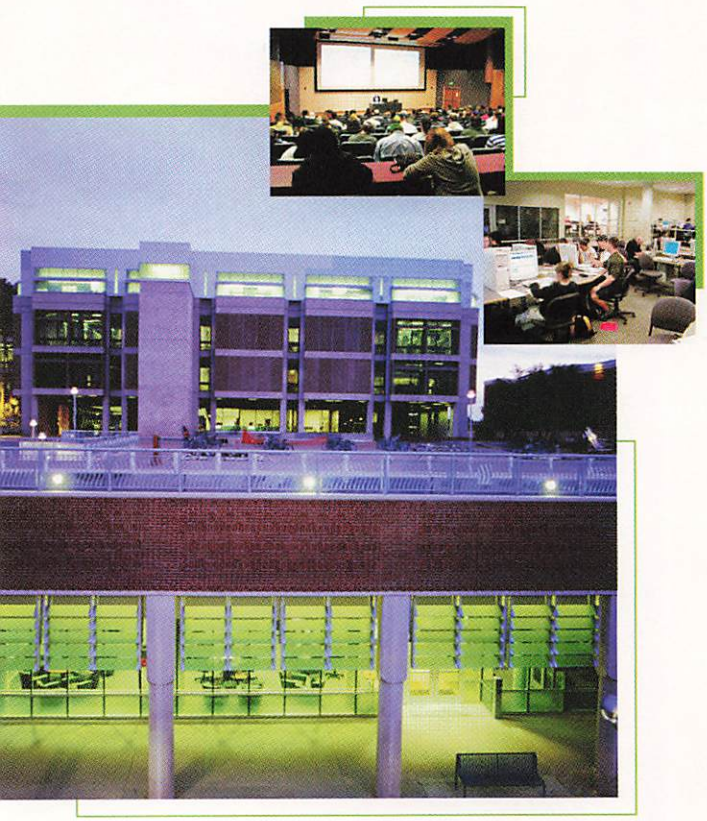

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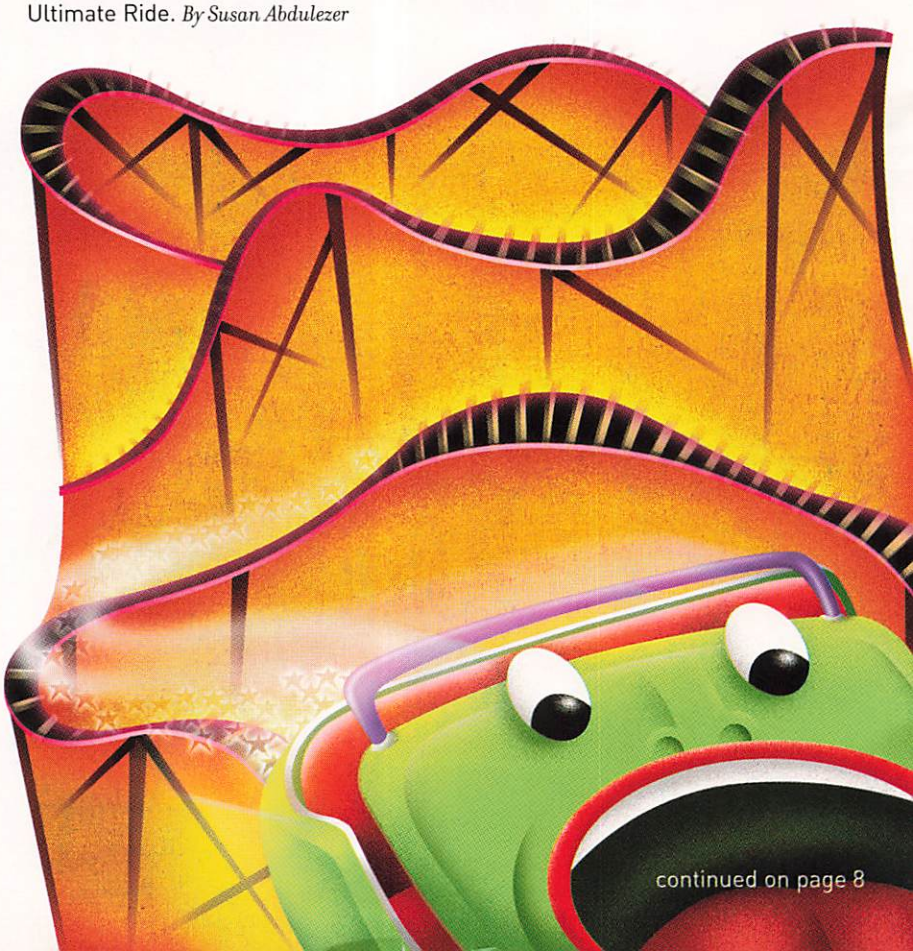
By providing for data collection, idea collaboration, concept mapping, remote research, local research and online engineering — technology tools funnel scattered ideas toward a common goal: the Ultimate Ride. *By Susan Abdulezer*



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California's 37th governor has made improving public education his administration's number-one priority. In this exclusive *Converge* interview, his responses reveal insights into key issues of technology and education today. *By Dan Page*

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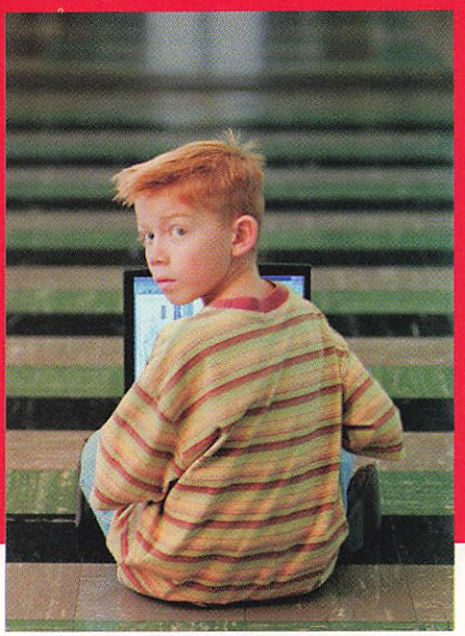

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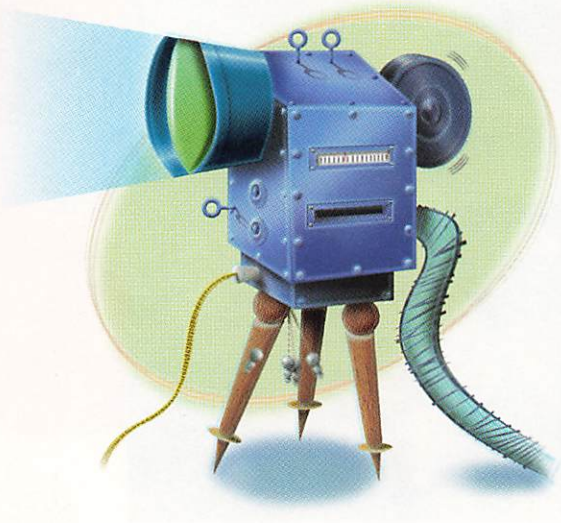
VIEWPOINTS

The Joy of Software, Multimedia and Integrated Solutions

Four leaders in education and technology share their thoughts on the joy of technology. Featuring Lynell Burmark, Lou Fournier, Susan Karnovsky and Terry Smithson. **Visit <www.convergemag.com>**

By Victor Rivero



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"There are three kinds of 'active': inactive, reactive or proactive — only one leads to professionalism."
Bernard Percy/Miriam Jones

YOU MAY HAVE SEEN OR HEARD THIS ANECDOTE circulating on the Internet. It's both very amusing and revealing of a wonderful truth. Enjoy.

According to a radio report, an Oregon middle school faced a unique problem. A number of girls beginning to use lipstick would put it on in the bathroom. Fine, but after they put it on, they would press their lips to the mirror, leaving dozens of little lip prints. The principal decided that something had to be done. Calling all the girls to the bathroom, she met them there with the maintenance man. She explained that all these lip prints were causing a major problem — and that he had to clean the mirrors every night.

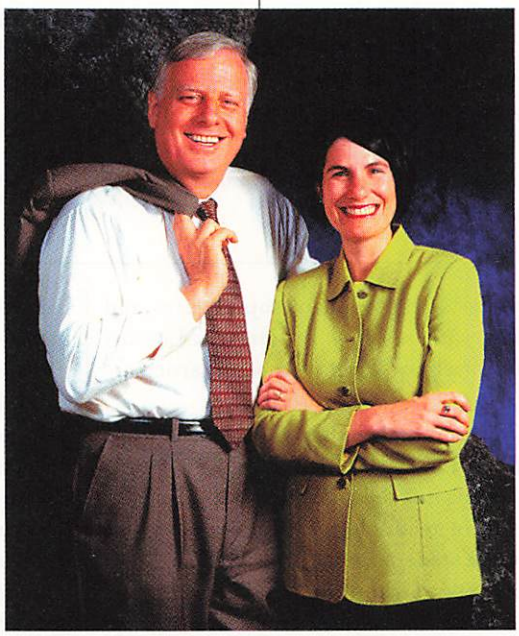
To demonstrate how difficult it was, she asked the maintenance man to clean them. He took out a long-handled squeegee, dipped it in a toilet, and then cleaned the mirrors with it.

Since then, there have been no lip prints on the mirrors.

There are teachers, and then there are educators. I recently delivered a series of seminars for educators and parents in Australia. I told each group the anecdote. After the seminars, people would ask me how to solve a particular problem they had. My answer: "How can you keep the mirror clean?" This would involve thinking "out of the box," and finding a solution that quickly helps an individual see the benefit of the proposed solution or answer.

When my daughters were in early toddler-hood, they had "bed reluctance." I knew if they decided when to go to bed, they would be much more likely to get to bed at the agreed-upon time. I told them they had a choice, they could go to bed in two minutes, *or* 120 seconds (you know the answer). Of course this solution only worked a few times before they realized the truth.

I would love to collect similar stories/anecdotes where a teacher/parent/student created an inventive solution that helped to prevent or handle a difficulty in a simple, yet unusual way. If you have or know of one, please e-mail it to me.



BERNARDPERCY
Editor in Chief
<bpercy@convergemag.com>

I'M A FOURTH-GENERATION CALIFORNIAN (there aren't very many of us!). I've always been interested in studying the gold rush. There's a tale I stumbled across and although it pre-dates the gold rush, it became a real saying of the times. It's an interesting framework for the quest of making a difference in education with technology.

A farmer heard of a circus coming to town. Back then, elephants were a brand-new feature to the show. He'd never seen an elephant and very much wanted to. He loaded his cart with vegetables to sell at the market near the circus. On his way into town, he came upon the circus troupe, led by the elephant. The farmer was thrilled, but his horse being quite startled, reared up, overturned the cart and ruined the vegetables. "I don't give a hang," said the farmer, "for I have seen the elephant."

"For gold rushers, the elephant symbolized both the high cost of their endeavor — the myriad possibilities for misfortune on the journey or in California — and like the farmer's elephant, an exotic sight, an unequaled experience, the adventure of a lifetime." (from *"They Saw the Elephant: Women in the California Gold Rush"* by Jo Ann Levy).

The gold rush created new technology uses and service models, much like what's going on in K-12 and higher education today. One service model that emerged in San Francisco in the 1800s was laundry services. During the gold rush, some men would send their laundry to China, waiting six months for its return. Women during the 1800s were quite entrepreneurial, owning a significant percentage of California businesses. One record reports a woman earning $100 per week "free and clear" with her washing service.

The education technology arena is full of its own elephants, with its own opportunities and challenges. The promise is worth the journey. We must find new ways to improve the student experience, but there's risk and uncertainty and as with the farmer, things don't always go the way imagined. Like those early gold prospectors, experimentation and persistence are the watchwords of our time as we discover the best ways to utilize technology for learning.

MARINALEIGHT
Publisher
<mleight@convergemag.com>

Virtual Volunteers

Raleigh, N.C. — Students at East Garner Middle School in the Wake County Public School System (N.C.) are utilizing the power of the Internet and the expertise of computer industry employees to enhance their classroom performance.

Each week, students in Patrick McArdle's seventh-grade enrichment class work one-on-one with IBM employees, who provide them with academic assistance, advice and a caring adult to talk to — all via the Internet.

The virtual volunteering initiative called IBM MentorPlace allows the employees and the students to communicate with one another using a Web-based tool that enables secure communications between the mentors and the students and allows teachers to monitor the online conversations.

By utilizing the Internet to correspond with their mentors, the students are able to receive advice and assistance from professionals in the working world while gaining valuable experience working with new technology.

"This has really opened up the students' horizons," McArdle said. "They are learning to interact with professionals outside of the school setting and how to use technology. Through this program, they are getting more comfortable using the technology. Some, because of the interest that they have developed in this class, have even created their own Web sites outside of class." ■

Sources: Center for Digital Government <www.centerdigitalgov.com>, Wake County Public School System <www.wcpss.net>

Bringing Students to Technology

Jefferson City, Mo. — Paul Wright, chief information officer at the Missouri Department of Elementary and Secondary Education, participates in a local coalition of businesses, K-12 and post-secondary institutions to assist in training and retaining professional technologists in the Jefferson City area.

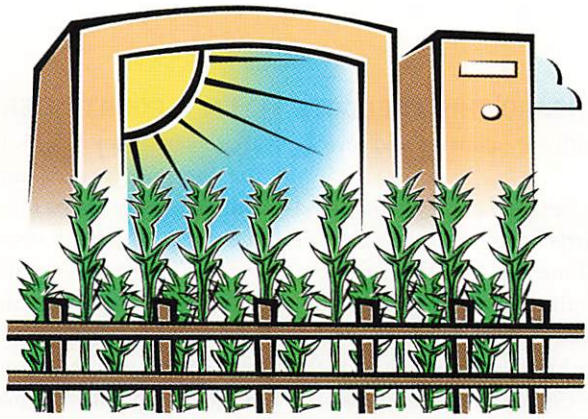
The Jefferson County Information Technology Coalition also hosts a summer institute for high-school sophomores and juniors with sessions at Central Missouri State University. Wright has been participating in the sessions since 1998.

"These have been very successful. The problem that post-secondary schools had was getting into the high schools to talk about careers in technology. My thought was to bring the students to the schools. There were similar programs in the area but none centered on information technology, were live-in sessions, or talked and provided hands-on sessions showing all the career paths in technology."

Students are provided training and hands-on experience in programming, database and networking. "We are continually improving as we go," said Wright.

For more information, visit: *<www.jcitc.org/whatsnew_businstitute.htm>*. ■

Source: Jefferson County Information Technology Coalition <www.jcitc.org>



Internet-Based Education Program

Bloomington, Ind. — The Indiana University (IU) International Resource Center has helped the national FFA organization develop an Internet-based educational program to help thousands of high-school students learn about international agriculture.

The new interactive learning program is described by FFA (formerly Future Farmers of America) as combining global agriculture and travel in one virtual tour. More than 10,000 high-school agriculture instructors will use the FFA Global Leadership Scenarios *<www.ffa.org/scenarios>* to provide a global agricultural perspective for their students.

The Web site and introductory CD-ROM are funded by the U.S. Agency for International Development. IU was the lead organization in securing the $280,000 grant for the project. Purdue University, WisdomTools and the national FFA also are involved.

Shawn Reynolds, director of the IU International Resource Center, said the diversity of international programs at IU was a key in developing the program. IU faculty with expertise on Honduras, Ethiopia and Moldova were used to help prepare the learning materials for these three countries used in the computer program.

Students using the program follow two of their virtual peers, Carmen and Eric, as they learn about international travel and the language, culture and customs of the countries visited. Each episode includes its own classroom activities and worksheets that encourage students to think, discuss and make decisions related to a global experience. ■

Sources: Center for Digital Government <www.centerdigitalgov.com>, Indiana University <www.indiana.edu>

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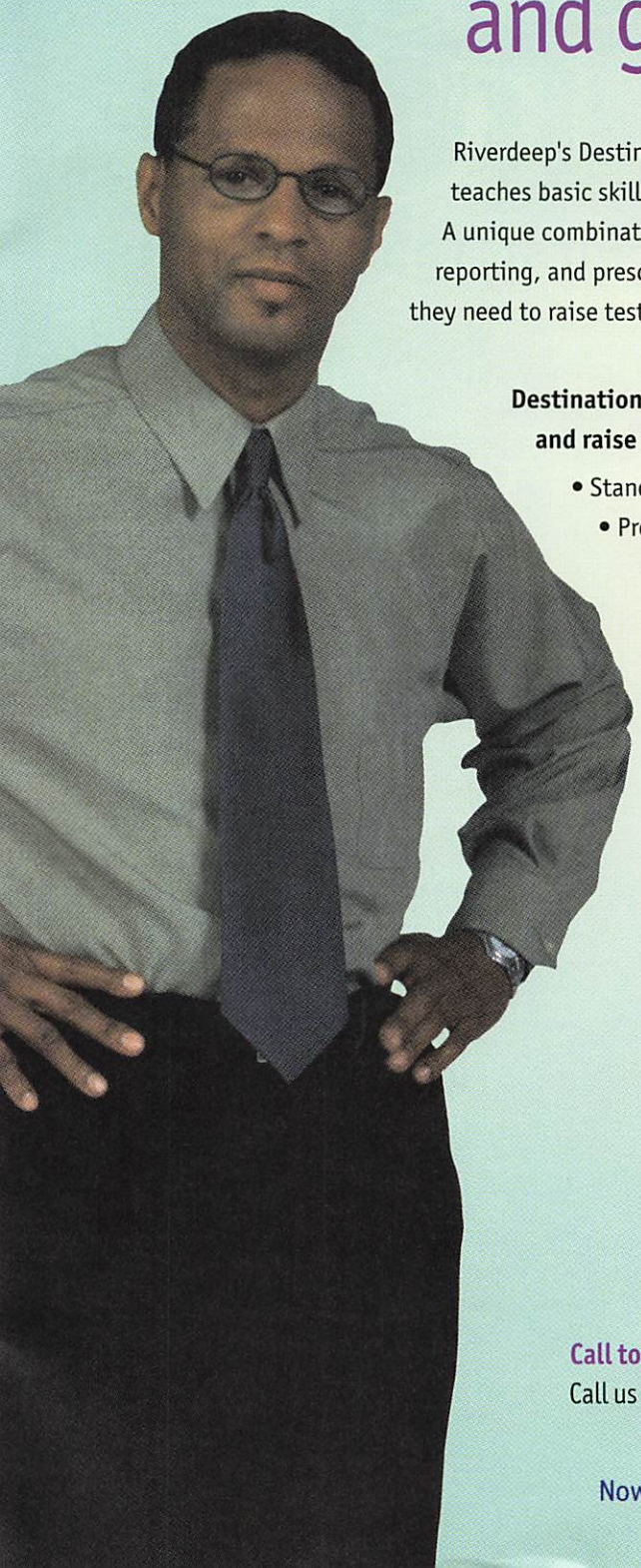

Riverdeep's Destination Math is comprehensive K-12 mathematics courseware that teaches basic skills, math reasoning, and problem-solving within real-life contexts. A unique combination of curriculum management, standards-based testing, instantaneous reporting, and prescriptive assignments give teachers and administrators the tools they need to raise test scores and guide students towards success.

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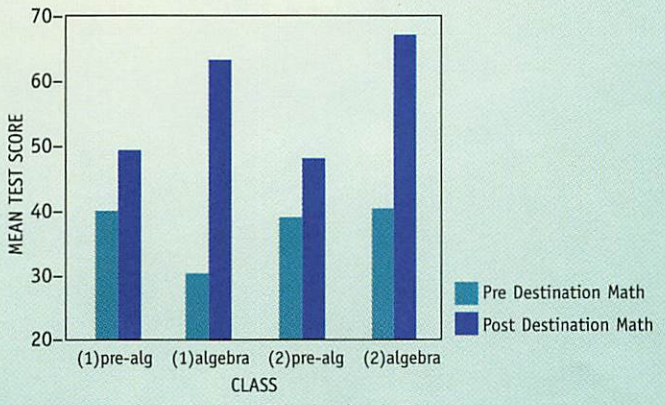
- State and national standards alignment



Actual case study: Mitchell High School, Colorado Springs Colorado. This graph illustrates gains in two groups of student's test scores for both Pre-Algebra (taught first) and Algebra. The data does not overlap, indicating that everyone showed improvement.

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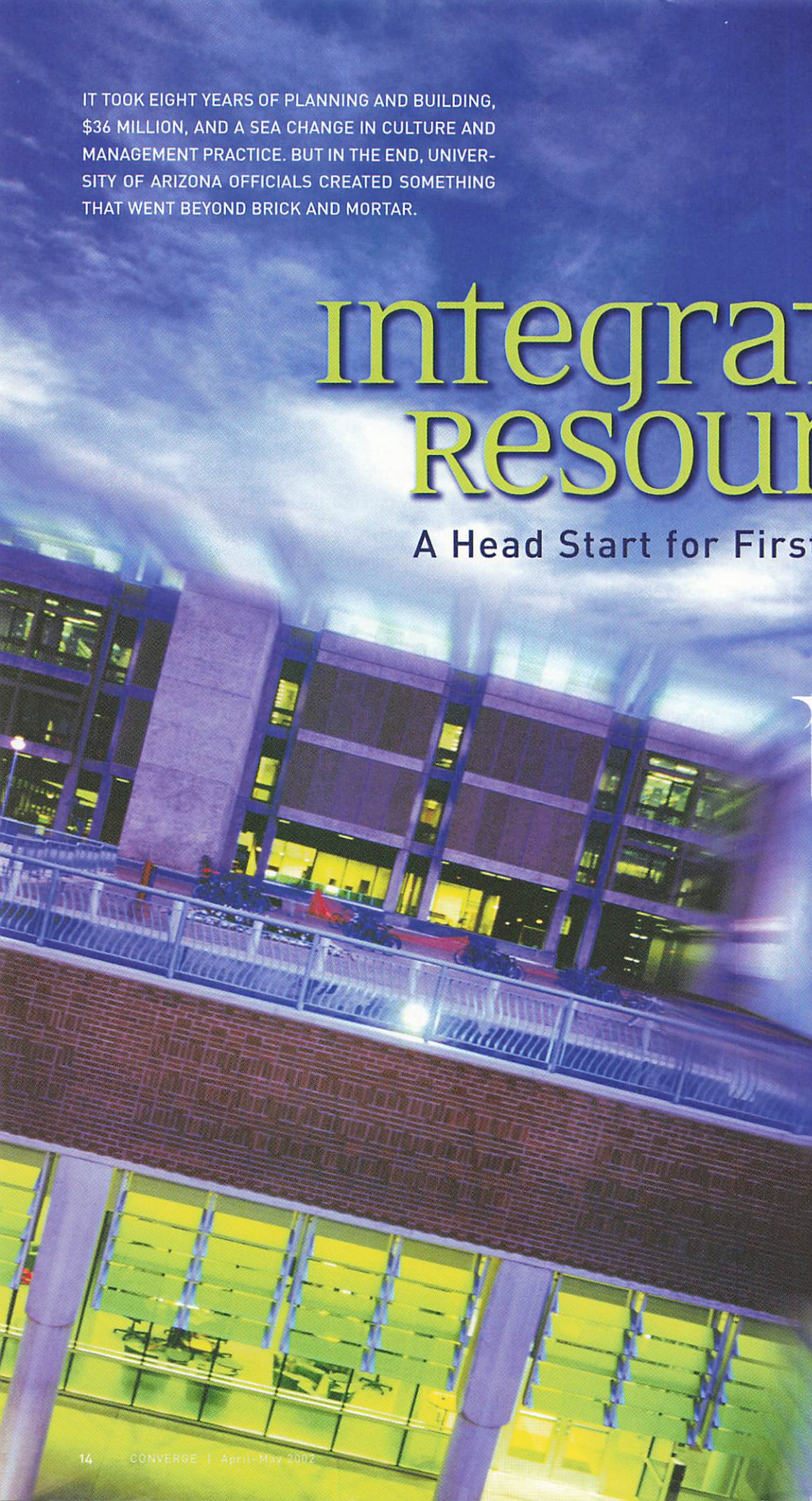

What did your first days as a freshman at college feel like? There's a pretty good chance you were at least a little lost and scared. Remember missing a class? How did you make it up? What if you needed tutoring? Good luck. Even if you were lucky enough to find someone who knew the subject, could they teach it in a way that fit in with your professor's presentation?

BY DAN PAGE
PHOTOGRAPHY BY AMANDA KOSTER

Intel® Model School Program

Preparing students to manage and maximize what technology has to offer is a high priority for Intel and education systems worldwide.

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The innovative Intel® Model School Program at Intel can make your vision for education a reality. Intel's goal is to provide a foundation so that students can become effective leaders in the future by ensuring that today's children have access to the resources, skills and experiences they need. School districts will be able to implement solutions in their quest to integrate technology into the classroom and take full advantage of anytime, anywhere learning via the Internet. Intel will provide access to content providers, service providers, hardware vendors and software developers. Intel can also assess the current status of technology and provide potential solutions by collecting data on technology infrastructures in member school districts.

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Through collaboration with leading corporations, teachers, staff, students and parents can choose from a range of new desktop or mobile PC packages, with service features and upgrade options that meet individual school and classroom needs. This program is provided at no cost to the schools. Purchases are made directly from the manufacturer at prices discounted for education.

The following equipment manufacturers support the Intel® Model School Program by offering reliable PC systems to schools, teachers, staff, students, and parents.. By visiting their Web sites you can view their products and services — each company's contribution to the Education PC Program.

Original Equipment Manufacturers (OEMs)

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Aspect www.aspectcomputer.com/index_ed.html
BOLData www.boldata.com
Caliber www.calibercorp.com/edu/modelschool.html
Coastline Micro www.coastlinemicro.com/msp
DakTech www.sundog.net/testing/daktech/index.html
Dell http://premier.dell.com/premier
(Model School Program passwords: Account code: US34T2X Access key: QW2Y6)
Gateway www.gateway.com/work/edu/k12/intelmodel.shtml
M&A Technology www.macomp.com/model_school.asp
Micron PC www.micronpc.com
Omnitech www.omnitechcorp.com/t1.cfm?AreaID=products&subareaID=IntelModelSchools&L3=intro
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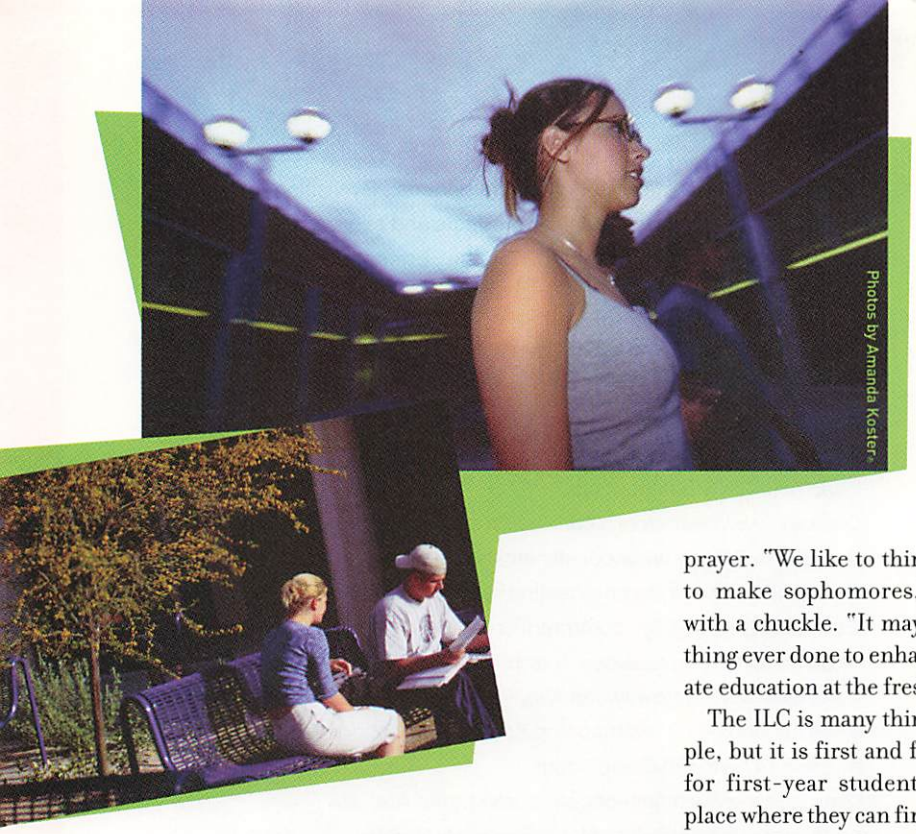

Photos by Amanda Koster

« **Transparent Technology.** First-year students don't get lost in the crowd at their newly-opened Integrated Learning Center, but they may lose themselves in the technology experience. The center houses large and small auditoriums; "kaleidoscope" (colorful, screened multimedia) rooms; discussion rooms; information commons; courtyard; media resource and freshman centers — all specially tailored to students transitioning from high school to college and ultimately to a 21st-century workforce.

Electronic whiteboards, 1.5 gigahertz computers with DVDs, cameras, surround sound audio, Mac laptop docking stations, digital slide projectors and wireless keyboards are a few of the many technology features behind the scenes, infused throughout the 119,000 square-foot facility. »

Being a freshman at any school isn't easy. But incoming students at the University of Arizona in Tucson have a particularly tough time. In the first place, the freshman class numbers over 6,000. For many, that's not just larger than their whole high school, it's larger than their hometown. The campus is the size of a city — and it's all red brick buildings. Easy to get lost.

"We wanted to do the right thing by increasing access," said associate dean Lynne Tronsdal. "But we soon realized we were losing the retention battle. Students were able to come here, but they weren't always able to stay. We were losing too many students in those first two years, and we needed to change something."

And change they did. It took eight years of planning and building. It took a commitment of $36 million. And it took a sea change in culture and management practice. But in the end, the vision was there and they did it. "We have created something that goes beyond brick and mortar," Tronsdal said proudly. "We have created a truly integrated learning center for incoming freshmen. It is our statement to them — you are a precious individual."

A PLACE TO MAKE SOPHOMORES

What is an integrated learning center? It's an answer to a freshman's prayer. "We like to think of it as a place to make sophomores," Tronsdal said with a chuckle. "It may be the smartest thing ever done to enhance undergraduate education at the freshman level."

The ILC is many things to many people, but it is first and foremost a center for first-year students. It is a single place where they can find most of the resources they need not merely to survive, but to thrive. There are classrooms, equipped with state-of-the-art technology, library resources, peer counselors, a wide range of information resources, and offices for many of the first-year professors.

In an earlier time — i.e., before the ILC opened — students who were aware they needed help and were aggressive (and brave) enough to seek it on their own might go to a professor and say, "I'm having trouble. Where can I find help?" That simple question — even if it gets asked, which all too often it does not — rarely has a simple answer. Well-intentioned professors might say, "Stop by my office, during office hours of course, and we can discuss your quandary at greater length." But where was the office? What if office hours occurred when the student had another class? How was the student to remember at what point in the lecture "understanding" hit a brick wall?

OVERCOMING BARRIERS TO LEARNING

The barriers to learning are copious and devious. The ILC recognized that problem and addressed it forthrightly and, as the name suggests, in an integrated manner. When a student asks for help, it is often just down the hallway, because teachers of first-year students have their offices and classrooms in the ILC. "We've also worked on changing the culture here," Tronsdal explained. "We expect professors to be accessible and to have office hours that are responsive to the needs of first-year students."

An extensive tutoring program is in place, staffed with teaching assistants who know not only the subject matter but also the manner in which the material is presented. Integration of tutoring services with the actual presentation ensures that students are better able to apply the outside help they receive to the actual coursework as it is presented.

Technology also plays a key role in the tutoring process. All lectures are videotaped and made available to students and tutors. The advantages are significant. Students who must miss a class are no longer dependent on being able to "borrow" notes from a friend to keep up. In addition, tutors can play back the lecture and find at what point the student lost the thread. As a result, tutoring can be more efficient, more focused, and better tailored to the specific needs of the student.

Few obstacles are more difficult for first-year students to overcome than giant lecture halls with poor acoustics and even worse visibility. The ILC addresses that issue with modern "stadium seating" where every student can see the professor — and the professor, likewise, can make valuable eye contact with every student. If too many are dozing, it's a sure sign that education is not happening.

Acoustic design — a blend of architectural and engineering expertise — has been applied to ensure that lectures can be heard. Students have more the feeling of being in a well-appointed theater

The Integrated Learning Center is a magnet to draw students to a university that is focused on individual success.

Photos courtesy of ILC.

than in the cavernous echoing lecture halls of old.

Overhead projectors — those beloved anachronisms that allowed professors to fumble endlessly with badly drawn images on floppy clear acetate — have been replaced with multiple video projection units capable of displaying materials from video cameras, computers, digital cameras and electronic writing surfaces.

Classrooms are wired for global Internet access and distributed learning applications. Hundreds of computers are located throughout the ILC, in classrooms, in the courtyard (which serves as a central gathering place for students), and in the library. An extensive software library and computer games also provide access and motivation for computer usage. It's all designed to promote the learning of computer skills, frequent communications with professors via e-mail, and acquiring the fundamental tools for successful learning in the 21st century.

An example of high-tech education is the ILC's "Who Wants to be a Millionaire" feature (after the instant-feedback, multiple-choice voting technology employed in the popular television game show). This real-time feedback system allows professors to poll students using multiple-choice questions, and to see immediately the percentage of students who "got the point." Buttons at each desk allow students to punch in their answer — A, B, C or D. Results are electronically tallied and the professor can adjust a presentation to provide additional information as needed. It is a useful tool for professors, it keeps students on their toes, and everyone seems to enjoy this "game-show" twist on teaching and learning.

INTEGRATED SERVICES AND PEER LEADERSHIP

Goal one is to keep students in school by overcoming barriers to retention in the first year. Goal two is to ensure that students are well prepared to continue their education using the technological tools, study habits and attitudes developed in the first year — with the help of professors, peer leaders and overall ILC resources.

Steven Hadju is a University of Arizona senior, double majoring in physiology and classical literature. He spends five hours a week at the Integrated Learning Center as a peer adviser with an organization called ACES — Advising Center for Exploratory Students. "Our main goal is to assist students in exploring their majors," Hajdu said. "We help them understand what is available and to see how their interests fit with various career paths. It's one of the many services offered at the ILC to help students acclimate and succeed."

Mackenzie Hyde, a sophomore, is also an ACES peer adviser. "The University of Arizona can be pretty overwhelming," she said. "The ILC brings it down to a more manageable size. The peer advisers in ACES have had a lot of training so we can help students adjust and set their sights on majors that they can really look forward to. Through the ILC, programs are coordinated in ways that keep students informed, interested and motivated. It's great that students have a home base, a place just for them. And access to technology makes it that much more fun and exciting to learn."

A GRAND VISION

Integration is the key concept in the Integrated Learning Center. "We have integrated across traditional management boundaries," said Tronsdal. "We were able to persuade managers to work together in a collaborative way, to agree on policies and procedures that would link students, faculty and available resources. We have redesigned classes to make them interdisciplinary and to ensure that students would work in teams to solve problems and support each other."

The Integrated Learning Center is one of those all-too-rare grand visions in education. It has only been open since January, and almost certainly there is much that remains to be done to bring it to its full potential. But it is in place, a magnet to draw students to a university that is focused on individual success. The ideas on which it is founded are sound and exciting. It is also a wonderful symbol to inspire and motivate incoming students. "We are trying to prepare our students for a lifetime of education," Tronsdal said, "and to give them the tools they will need to succeed in a career."

She then added, with a noticeable inflection of pride, "I can say to our students, 'If you ever wonder if you matter here, just take a look at this building we built — just for you.'" ■

contact information

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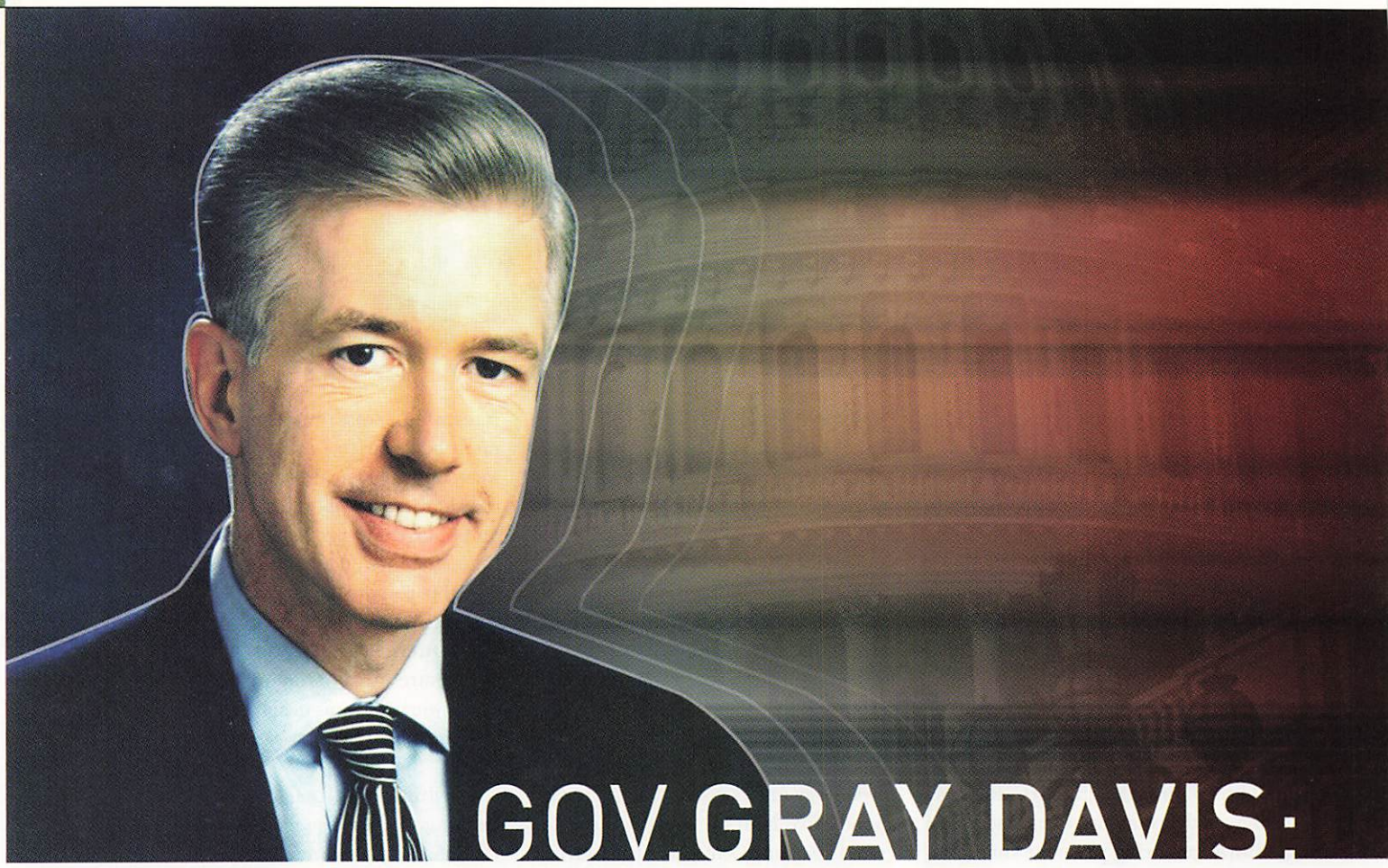
DanPage *<dmpage@aol.com>* has written about the Internet and technology since the early '70s. His work appears in magazines, a book and more than 250 corporate annual reports.



GOV. GRAY DAVIS: A Leading Vision

» CALIFORNIA'S GOVERNOR HAS MADE IMPROVING PUBLIC EDUCATION HIS ADMINISTRATION'S NUMBER-ONE PRIORITY. **BY DAN PAGE**

Gray Davis' first official act as the state's 37th governor was to call a special session of the legislature to move forward on his proposals to strengthen teacher training, have every child reading by age 9, and increase accountability in public schools.

After winning a term as lieutenant governor in 1994 by a landslide margin, Davis parlayed his popularity into a successful run for the top spot in 1998. He has solid public approval for his ideas on improving California's vast public school system — and has a vision to match the mandate.

Davis' focus on education encompasses a healthy dose of technology, for which his state is also famous. He is addressing a worsening teacher shortage through innovative online programs for teacher preparation and is closing in on automation of the credential-renewing process. Other education initiatives include incorporation of technology into the academic content standards and development of public/private partnerships that advance the use of technology in schools.

Converge invited the governor to share his thoughts with our readers. His responses reveal insights into key issues of technology and education today — as well as a more personal slant on educational influences in his own life. Mixing political realities with a commitment to rigorous academic standards and a taste for innovation, Gov. Davis delves into topics of substance that confront public school systems throughout the United States.

Q: What's your vision for the use of technology in education?

California has nationally renowned academic content standards spelling out what each student should learn in each grade in order to have a solid elementary and secondary education. Imbedded in those standards are the use of technology and the understanding of technology's contributions to various fields of knowledge. Students must learn word processing and basic desktop publishing and how to use the Internet as a research tool.

Teachers should be trained to effectively use technology as a tool for improving student achievement,

and school principals should use technology to monitor student achievement.

Q: What role can technology play in handling the impending large number of retiring California teachers, and alleviating a potential teacher shortage?

California is already using technology to recruit, train and retain qualified teachers. We have instituted online programs (CalStateTEACH) that allow working elementary school teachers to earn their credential without attending traditional college classes. The curriculum uses a self-study format, along with online, print and CD-ROM materials. They share ideas through Web-based "class discussions" and get professional feedback through on-site coaching. Participants receive personal guidance from mentor teachers at their schools, as well as California State University faculty.

The $9 million CalTeach recruitment effort includes an interactive Web site <*www.calteach.com*> and a referral database for qualified teachers seeking jobs. The Web site directs prospective teachers to the six regional recruitment centers and informs them of the many incentives now available.

Beginning this year, the California Commission on Teacher Credentialing will offer an online credential renewal process [and later] an online application for initial credentials.

Q: Would you support an end to social promotion of students if technology proves successful in customizing individual education programs?

Students should be taught to the rigorous standards adopted in California. Our academic content standards have raised the bar substantially in our classrooms. But it will take time for every student to benefit from teachers trained in those standards and for all curriculum and materials — whether traditional or technology-based — to be aligned to those standards. I support standards-based education for all students, but we're a few years away from being able to offer customized education programs for all students.

Q: What can industry/business do to support technology in education?

Schools use technology in two basic ways: first, to support effective, efficient school management (everything from student information systems to GIS [geographic information systems] mapping of school boundaries); and second, as a teaching and learning tool .

Many school districts lack the capacity to keep up with the rapid changes in both of these fields. Industry should partner with districts to support them in decision-making about what to buy, when to buy, and how to use the best available technologies.

A good example of such partnerships are the six regional California Educational Technology Forums being sponsored by your magazine, Intel, and others, where school districts can meet with technology companies to review their technology plans and get answers to their questions.

Q: What is your idea of a good education? Who has inspired you in your education?

A good education means good teachers, and that's why I've focused many of my education initiatives on recruiting good teachers and training them to teach our rigorous standards. I was inspired to succeed by a baseball coach when I was in high school. This coach pushed me to do better and reach for greater success. Every child needs that kind of encouragement from a teacher or some other adult.

Q: What are the 21st-century skills students need to succeed?

Reading, of course, is the gateway skill that makes all other learning possible. The critical thinking skills that come with a solid foundation in math are ever more important in a knowledge-based economy. California students take algebra and must pass an exit exam in English language arts and math in order to graduate from high school. With the explosion of information on the Internet, students must have good research and analytical skills that will enable them to sift through information and intelligently assess its value.

Q: How can public/private partnerships benefit the use of technology in education?

We have an exciting partnership between the private sector and our leading universities that bring together the top minds in academia and private research to tackle complex scientific challenges — such as distance education. Right now, a partnership through the UC Irvine satellite office of Cal(IT)2 Institute for Science and Innovation along with the Digital California Project, is working on a multi-million dollar effort to build the network infrastructure needed to prepare California's schools for advances in network technology. I expect great solutions to come out of these efforts. ■

DanPage <*dmpage@aol.com*> has written about the Internet and technology since the early '70s. His work appears in magazines, a book and more than 250 corporate annual reports.

By John Fleischman

THE JOY OF TECHNOLOGY IN TWELVE

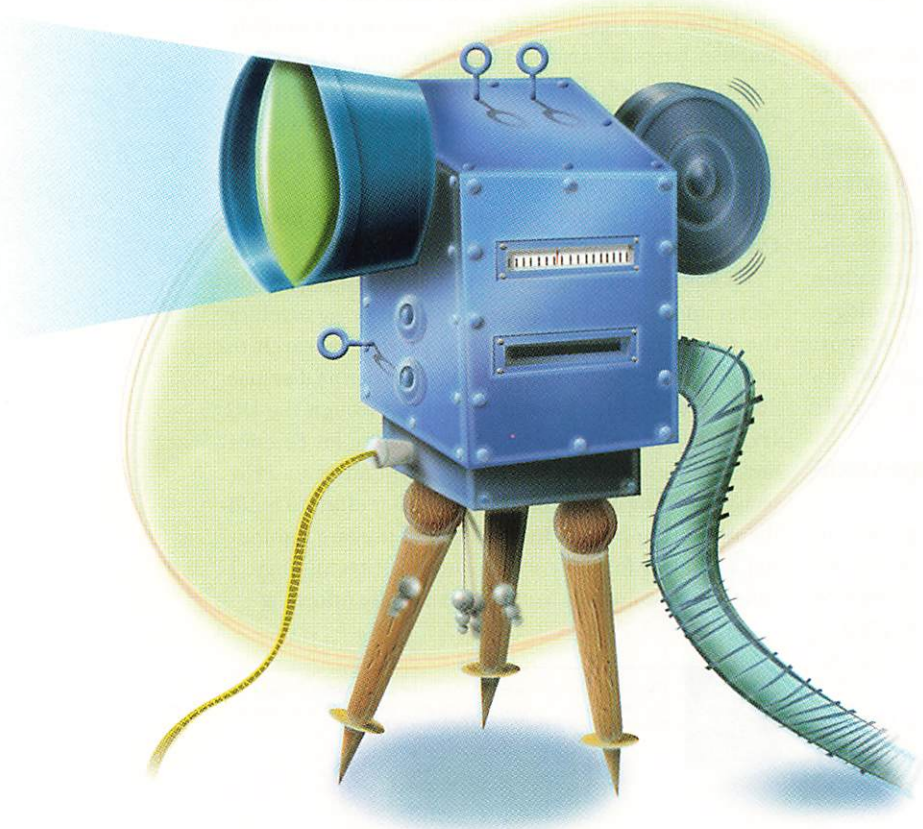
IN MANY WAYS WE HAVE ENTERED THE ERA OF PERVASIVE TECHNOLOGY, A WORLD IN WHICH EDUCATIONAL TECHNOLOGY IS BECOMING INCREASINGLY INVISIBLE, MOBILE, IMBEDDED AND AVAILABLE.

A DOZEN YEARS AGO, doing a media presentation at a remote location required carrying a "luggable" portable computer and a monochrome LCD panel that was placed on the top of a super bright overhead projector. It was painful, not only to carry the equipment but also to show something in black and white in a room that had to be pitch black.

During the same era, the mainstay for educational video production was ¾" U-matic production equipment. Many schools and colleges used that format since it was mid-range in price and resulted in acceptable quality "industrial" level videos. Timecode editing was a luxury back then as was producing simple digital effects.

Twelve years ago, connectivity to the Internet was only for the brave few. Connecting often meant using very slow modems while typing cryptic commands to access information stored on mainframe computers. Hypertext transfer protocol (HTTP) was only a twinkle in the eye of Tim Berners-Lee.

Thank goodness times have changed. Now we can enjoy the fruits of the digital revolution and participate in the joy of creating and using technology in education. In many ways we have entered the era of pervasive technology, a world in which educational technology is becoming increasingly invisible, mobile, imbedded into the environment, and ever more available via a ubiquitous network infrastructure. For many educators, simplicity of use, reliability, and constant access are bringing about a new level of awareness, utilization and joy in using technology.



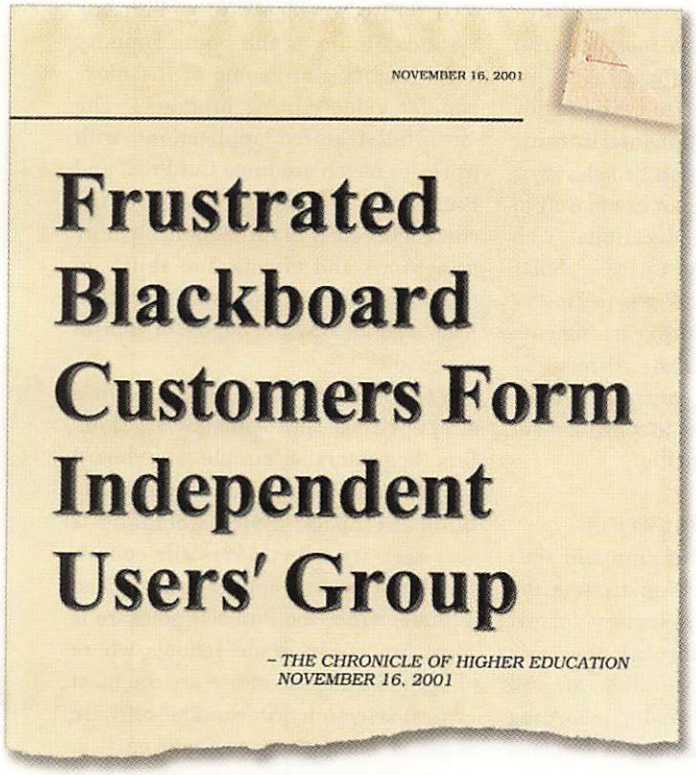
PRESENTATION SOFTWARE TO DELIGHT AND AMAZE

A 2-pound computer, some simple presentation software, a 4-pound projector and presto, you have the ability to create and deliver some captivating presentations. Sure, some of those portable computers and projectors are not cheap, but prices are continuing to fall as performance improves. And yes, without some training, it is possible to do incredibly bad presentations. So what are some of the cool software tools that could bring joy to your creative process?

The old standby for most of us is the venerable Microsoft PowerPoint. It's used by millions of teachers, professors and students. PowerPoint is easy to use, and the latest 2002 version for the PC

Not all eLearning providers are the same.

What kind of support should you expect?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platform offers some great new backgrounds and new animation capability. So where do you go when you're ready to move to the next level?

Astound Presentation 8.0 <*www.astound.com/wc/pres/pres_001.html*> is a software package that's designed for creating dynamic multimedia presentations. The user interface is simple to navigate, and the feature set includes a variety of backgrounds, a wide array of animations and a wealth of templates. Most animation programs require hours to learn, often with very detailed steps to create simple on-screen animation. Astound Presentation enables you to use multiple objects per slide, each with sophisticated timeline synchronization. It also incorporates a built-in quiz generator and scoring via a free Astound.com account. Simplicity of design and ease of use make Astound an interesting choice for creating simple and fun multimedia presentations.

FOR MANY EDUCATORS, SIMPLICITY OF USE, RELIABILITY, AND CONSTANT ACCESS IS BRINGING ABOUT A NEW LEVEL OF AWARENESS, UTILIZATION, AND JOY IN USING TECHNOLOGY.

For its sheer power and flexibility, Macromedia makes some of the best presentation software. Director and Flash are Macromedia products that have been around for years and continue to delight and amaze tens of thousands of users.

Flash 5.0 <*www.macromedia.com/software/flash*> is one of the best tools for creating exciting animation that can be delivered offline or online via the Web. Animation, however, is only one of many capabilities. Flash is also a very dynamic presentation tool and a tool for developing and delivering sophisticated applications.

High-end presentations created with Flash are a joy to watch. Using Flash, The Institute of Human Origins has created an interactive learning environment program titled Becoming Human <*www.becominghuman.org*>. Flash is also used as a means to introduce users to complex Web sites. One such example is The Study Place <*www.thestudyplace.org/tour/tcheckflash.htm*>.

Director 8.5 Shockwave Studio <*www.macromedia.com/software/director*> is arguably one of the most powerful authoring and presentation tools. Shockwave is also used to create highly interactive demonstrations and learning applications. The British Broadcasting Corporation uses Director extensively to produce interactive educational Web sites. One example is Space — Solar System <*www.bbc.co.uk/science/space/solarsystem*>. At ExploreLearning.com <*www.explorelearning.com*>, Director is used to create user-controlled, real-time learning activities that bring math and science concepts to life.

DIGITAL VIDEO REVOLUTION

In many higher education and secondary schools, ¾" U-matic was the popular videotape production format from the mid-'70s through the early 1990s. In fact, some institutions are still using that rock solid analog recording format. From ¾" U-matic, many schools migrated to SVHS or the higher quality Sony Betacam. During the 1990s, institutions that could afford it made the commitment to produce video on one of the emerging digital tape formats.

No longer an expensive tool reserved exclusively for institutions with deep pockets, digital video (DV) has emerged as a mainstream tool for producing and editing presentations, training programs and instructional videos. Today, quality programming can be produced with a mini-DV recorder then transferred to a standard desktop or laptop computer where it can be edited and output onto videotape.

The most significant advances with digital video have occurred in the area of post-production. Software that now runs on standard laptop or desktop computers has revolutionized the ability to manipulate audio and visual images.

Moderate and inexpensively priced video editors can be used effectively with a wide range of school-based training programs. Final Cut Pro 3 (Macintosh only), Adobe Premiere 6, MGI Software VideoWave 5, Pinnacle Systems Studio 7, and Sonic Foundry VideoFactory 2 are some of the more popular video editing programs. The most full-featured applications with prices to match are Final Cut Pro 3 and Premiere 6. Both software packages include tools such as professional quality transitions and effects, the ability to input and output a wide variety of formats, and an amazing degree of control over audio.

MGI Software VideoWave 5, with a street price of approximately $120, offers beginners a simple storyboard interface with solid video editing capabilities. Pinnacle Systems Studio 7 is very user-friendly yet versatile enough for simple editing applications. Priced at under $100, the Pinnacle software is ideal for use in grade schools where simplicity and ease of use are the most critical selection criteria. The software is fun to manipulate and allows users to focus on content versus process.

BIG PIPES AND NO WIRES

Twelve years ago, most of us used 1200-baud modems to connect to the Internet. The World Wide Web was just emerging, and the first Web browser was being hatched by Steven Jobs at Next Computer.

Today many educators take basic connectivity for granted. In fact, many states are in the process of building high-performance education networks that will include access to Internet2 resources. Ubiquitous and high-speed connectivity in education has brought and will continue to bring about exciting new ways for teachers to teach and students to learn.

One example of this "big pipe" revolution is the Digital California Project <*www.cenic.org/DCP.html*>. By June

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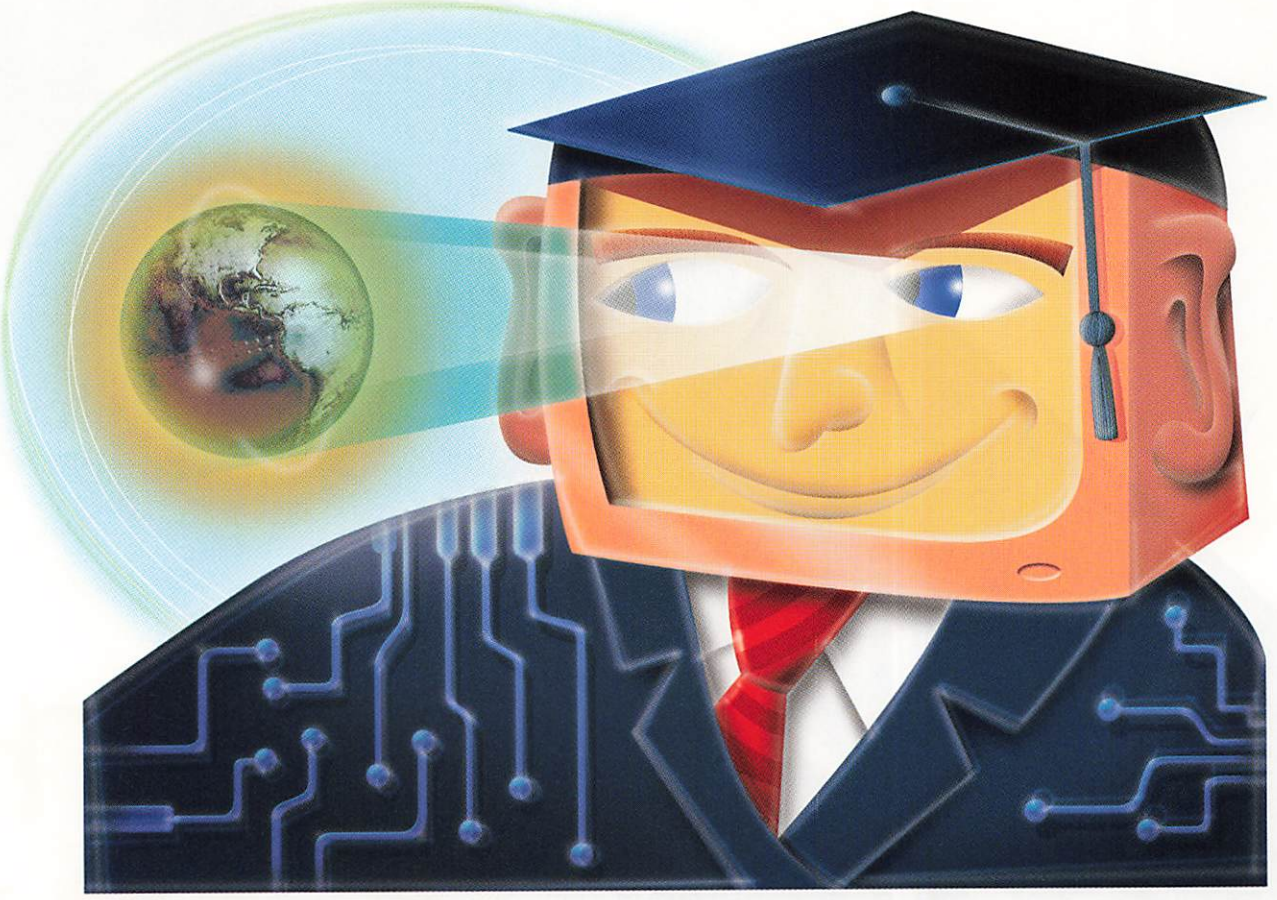

2002, 11 hubs and 78 nodes will be established. Minimum connectivity speed to the nodes sites will be a DS3 (a T-3 line) running at 45 Mbps. At that speed, video will stream like it's coming from a local VCR, videoconferencing over the Net will be a reality, and new types of distance learning opportunities will be possible.

THE JOY OF USING TECHNOLOGY IS ALL AROUND US IN EDUCATION.

For some educators, a new sense of joy has been generated via breaking the bonds of wires. The new wireless environment offers the ability to transmit signals over radio waves instead of wires. Television remote controls and garage door openers were the first wireless devices. Now the cordless telephone, and wireless PDA, mouse, keyboard and computer are commonplace.

Wireless local area networks (LANs) are already popular in many schools and institutions of higher education. They can cover a range of 500 feet indoors and up to 1,000 feet outdoors. They may service a smaller area than their WAN cousins, but LANs can transfer data much faster, at speeds up to 11 Mbps. In the past year, the cost of wireless networking has been cut in half with the introduction of new wireless adaptor cards and base station technology.

Similar to the early days of e-mail in education, wireless LANs are emerging to create flexible learning environments. For educators and learners, wireless LANs offer the joy of not being tethered to a physical place. With wireless services, learners can be mobile and have anytime anywhere access to communication and information.

DIGITAL LIBERATION

The joy of using technology is all around us in education. Before school, a student with a digital camcorder is capturing a student activity and by late morning is showing an edited version to the entire student body. At lunchtime, a teacher is accessing important e-mail from a table in the cafeteria, without any wires. And that evening, the school superintendent is showing an important presentation and wowing the school board with graphics and animation that beautifully reinforces the need for a new science wing.

In less than a dozen years, we have been liberated from analog chains and have been presented with the new digital world. It's an exciting and wonderful time to be involved in creating and using technology in education. ■

Related Converge Articles » Nov '01, *"Portals for Education: Build or Buy?"* » Jan '01, *"New-Edge Products and Services"*

John Fleischman <jfleischman@scoe.net> is Director of Instructional Technology and Learning Resources at the Sacramento County Office of Education (Calif.).

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By Susan Abdulezer

Roller Coasters at O'Leary Junior High

In 1884, LaMarcus Adna Thompson nailed flat steel track onto a raised structure of undulating wooden planks in the open salt air of a sandpit on the edge of Brooklyn, N.Y., known as Coney Island. Then he added a car and seats. How he coaxed the first willing volunteers to climb into those cars only to be hurled down from a tower at a breakneck speed of 6 mph over 600 feet of track is unknown. But afterward, there was no shortage of thrill-seekers clambering to ride the "Gravity Pleasure Switchback Railway," the first roller coaster built in the United States.

The thrills may have been the brainchild of Thompson, but the facts are courtesy of Aaron, Bryan, Whitney and Jessica — eighth-grade research team at O'Leary Junior High School in Twin Falls, Idaho — who have diligently paid homage to their predecessor before hawking their own gravity-defying wares.

"Our roller coaster is special!" shouts the copy from their PowerPoint presentation as it extols the excitement of camelback tracks racing through an aquarium, waterfall tracks flowing in spirals, and a mountain over which guests plunge, in a "Very thrilling ride!"

"The hardest element to design: the corkscrew with an inversion. The marble would always drop off — it didn't have enough speed. At the end, when I tried to add camelbacks, the marble really slowed down. That's when I came up with the idea of WD-40. Since that didn't work very well, we wiped it off and used baby oil, which worked much better."

– Lacey Higley

»

First Coast, then Boast!

Convincing a fictitious amusement park committee to purchase their ride — using appropriate 19th-century hyperbole — is a small part of a collaborative, interdisciplinary journey called the "Wild Ride" — a project conceived by Theresa Maves and Meile Harris, O'Leary Junior High eighth-grade science teacher and math teacher. Later, language arts teacher Jill Whitesell integrated her discipline as well. The goal: to painlessly, if not effortlessly, lay down some joyful experiences into exuberant middle-school minds. And Maves isn't content with just any joyful experiences. Newton's Laws, calculating potential energy, collecting data on the opposing forces of acceleration and friction, and mapping motion are just a few of the concepts her students grapple with — willingly.

"The Wild Ride project is a six-week unit," said Maves. "It starts in science where we talk about roller coasters and then the physics behind the way roller coasters are made. And then how Newton's Laws apply to something like roller coasters. That's where it starts; it centers on that subject in my science class. At O'Leary we (the staff) are on a team. We have a science, math, social studies, language arts and a reading teacher. We all share the same kids. So, it's really easy to integrate our concepts, combine our content areas. We came up with a culminating project, something that groups of kids could work on that wasn't just a science or math project, but also one that included science, social studies, math and language arts skills. That's when we came up with their mission: a roller coaster design to sell to an amusement park."

"My roller coaster had five elements: initial hill, loop, batwing, camelback and inverted track. I looked up how gravitational forces worked to understand how to construct an inverted track. A software program helped me understand how much momentum was needed to go into a loop. This program had you connect different (roller coaster) elements together in different varieties to see what worked and what didn't — according to Newton's Laws."

— Sarah Bond

"I started with a hill, loop, corkscrew, and then a camelback. I decorated it with a starburst fence, benches and buildings. I had green tissue be the grass; made a parking lot and glued in little cars. I used two types of computer programs and formulas to figure out acceleration, velocity, momentum potential and kinetic energy and force. It took almost 90 minutes to make all these measurements. I worked on it for three days. The hardest part was determining how much momentum I'd need to get the marble to make it through all of the elements. Then I finally figured it out — and it worked!"

— Sierra Payne

Divide and Ride!

It's no accident that LaMarcus Thompson included the word "gravity" in the name of that first coaster. The connection between the thrill of descent and the laws of physics is inseparable. But the O'Leary team was after more than science connections. They wanted the thrill factor, the simple heart-pounding idea of a roller coaster, to impel students on a frictionless, interdisciplinary, academic ride constructed solidly on Idaho standards for math, science, social studies, reading and language arts.

"To 'sell' their design, they have to come up with it — which is what happens in science — figuring out acceleration and forces on roller coasters so they can design one that is safe, yet thrilling," said Maves. "In language arts, their job is to persuade the amusement park committee to buy their ride, so they're putting together a presentation, doing a lot of persuasive and research writing. In math, they learn graphing motion and use mathematical language to describe motion and forces. In social studies — our hardest subject area to connect — they go over a kind of history of amusement parks, what started it, how it blends into society. A country that is economically sound starts dreaming up all these wild things to do in their free time. The students explore why it is that we have the desire to be thrilled."

The students must also grapple with the less measurable skills of teamwork, organizing their own learning, and choosing a "job" within each design group. Before they're divided, all the students get all

ROLLER COASTER TERMS: CAMELBACK - two hills in a row with a shorter second hill. CORKSCREW (or helix) - there are different types, but mainly, partial track inversion; cars alternate from upward to side to upside-down position, then to the other side and finally, face-up again. Repeated two to four times in a row. Horizontally stretched track. SPIRAL - starts high, circles down until cars are near bottom. No inverted track, but cars do go on side. LOOP - elliptical shape; cars go completely upside-down at top of loop. Cars can be backward or forward. SLIDE - basically a hill; starts high, angles down. Cars will jump track if too near 90 degrees. BATWING (or boomerang) - two-dimensionally, looks like cursive capital letter G. In 3-D: top stretches to get small loops suspended in air, followed by suspended twisted track; drops into small loop as cars near bottom of G-shape. Backward pull through parts.

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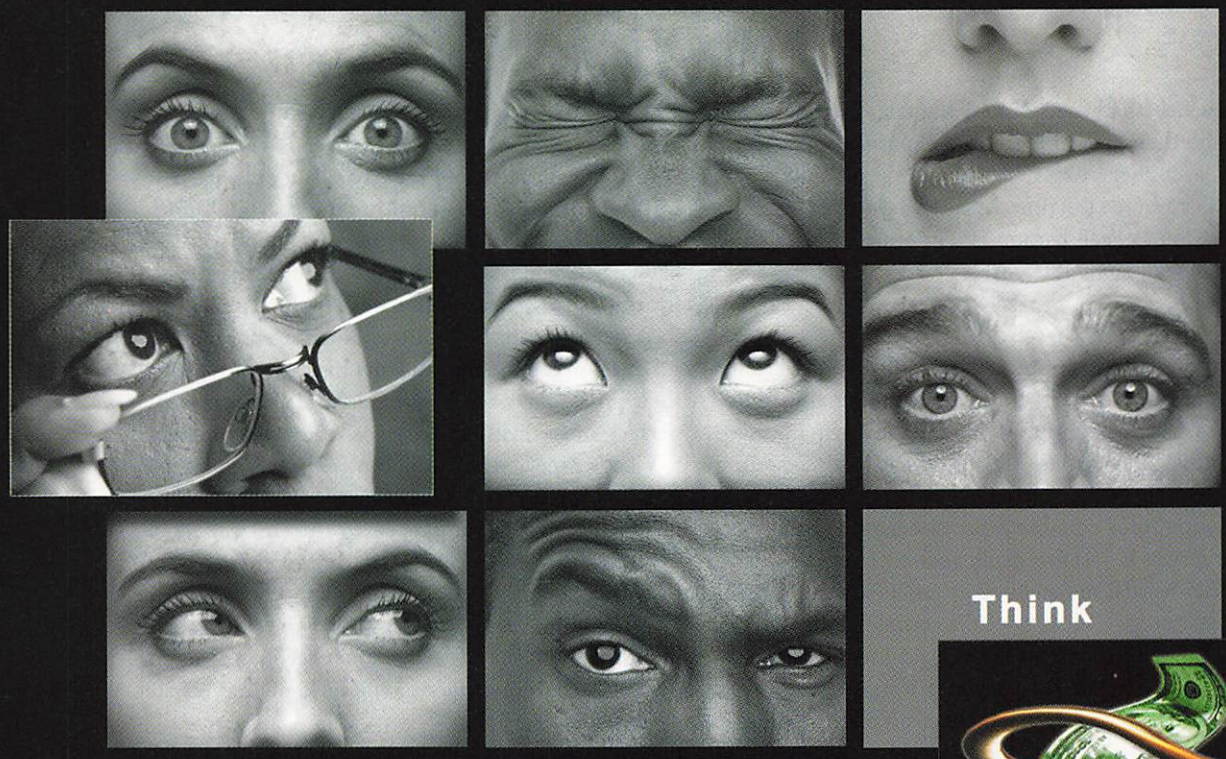

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the science, math, social studies and language arts they need for their project. Then they choose the jobs: engineer, architect, researcher or public relations; roles that they assume full time for three days of intense collaboration as each coaster is constructed, tested and presented by student teams.

The Notion of Motion

Just as the forces of motion invisibly hold the roller coaster cars on their track, the use of underlying information technology wields a transparent grip on these dissimilar disciplines, keeping them from barreling off into their own trajectory by providing tools for data collection, idea collaboration, concept mapping, remote research, local research and online engineering. In other words, the technology tools funnel scattered ideas toward a common goal: the Ultimate Ride. And how the O'Leary team does this is as fluid as, well, a 300-foot drop-off of the "Regurgitator" — a coaster designed by Melissa, Mike, Erin and Rudy — where "Special effects are ... sure to make you come back for more!"

contact information

O'Leary Junior High School
<www.tfsd.k12.id.us/ol>
Theresa Maves
✉*<mavesth@tfsd.k12.id.us>*

"We use Inspiration software to map ideas (Newton's Laws); Pasco Probeware to collect data on motion and graph it on a computer in math and science labs," said Maves, "and to analyze acceleration and velocity of our roller coasters and to compare measurements of speed, distance and time. These fancy little things (Texas Instruments TI-83 graphing calculators) display data in a second and in a graph, and you see what your motion looks like."

In addition, students do Internet research in social studies class, constructing an extensive database of Web sites covering coaster design, history, statistics, forces and motion. They use these facts across all subject areas, but it's especially handy in preparing interactive multimedia presentations using PowerPoint or HyperStudio programs, to "sell" their roller coaster concepts. Digital cameras and portable keyboards (by AlphaSmart) are used to document progress and supply images and text for the PR teams.

In reading, students master technical documents. But they must also find books that "thrill"— not a hard sell. On their own time, they scour the library, checking out and poring through books. They access a library database, find their book's listing, and take a comprehension test on the library computer — on the spot. This automatically collected data is made available to the teaching team to monitor student progress.

The Thrill of the Hill OR How to Master Disaster by Going Faster!

Armed with facts and formulas, students are ready for their final project: building the coaster. Done at home using foam tubes curled in loops, slides, batwings, camelbacks and spirals, they bring them in for testing. Calculators in hand, "photogate" probeware set to catch the motions of different masses of marbles on the fly, the students measure the speed of their projectiles over dips, banks and slopes until the perfect, most thrilling coaster is ready to be unveiled.

What's expected seems deceptively simple: marbles must stay on the track (about 5 and 6 meters mounted on a pegboard measuring 75 cm by 100 cm) while moving over at least three different design elements. But the concepts mastered, and the names chosen — the "Regurgitator," the "Amazon" and the "Black Diamond" — rightfully suggest grander accomplishments, documented in meticulous journals kept on every step of coaster construction.

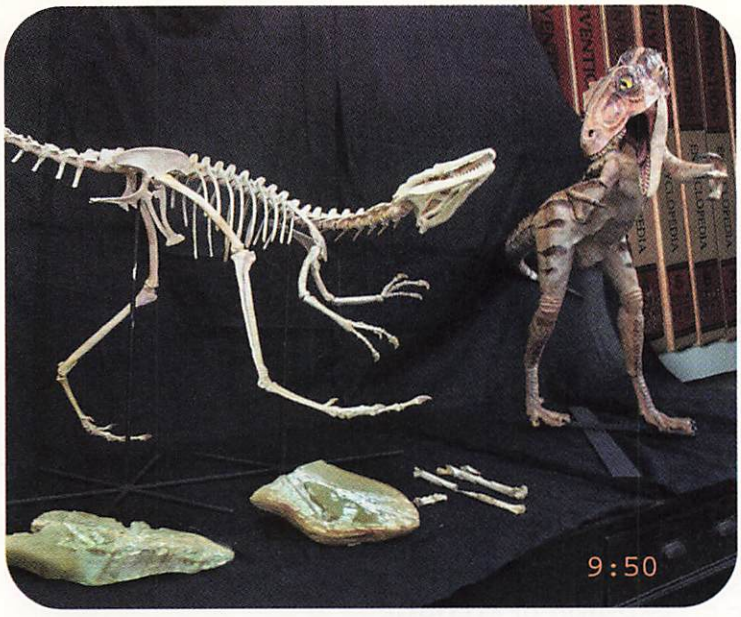
"They have to tell me everything they did on their project," said Maves. "They write things like, 'I tried this loop, it didn't work, the marble kept jumping off, there wasn't enough inertia to bring it around; there wasn't enough or there was too much momentum and it flew off the loop, etc.' — all this talking and figuring out how to make it work. They quickly learn what goes together."

Pride in the Slide

The day the coasters come to school is a celebration. Parents, grandparents, brothers, sisters, aunts and uncles who have all become involved in the project converge on Maves' classroom. It's more like Tivoli Gardens, Coney Island or Disneyland than junior high. But the celebratory atmosphere of the day has as much to do with the momentum of a compelling idea as it does with the actual roller coasters. An idea which creates an inertial force that sends students sailing into the depths of history, physics, vector algebra, engineering and communications, is a journey every bit as new, and every bit as exciting as LaMarcus Adna Thompson's first roller coaster. And to recap Aaron, Bryan, Whitney and Jessica, "It's a very thrilling ride!" ■

Resources » *<www.intel.com/education/projects/wildride>*
<www.netc.org/classrooms@work/classrooms/middleteam/orientation/school.html>

Susan Abdulezer *<sabdulezer@aol.com>* Multimedia Coordinator for New York City Public Schools Special Education, received the Computerworld/Smithsonian Award for Innovation in Technology in 1996 and 1997.



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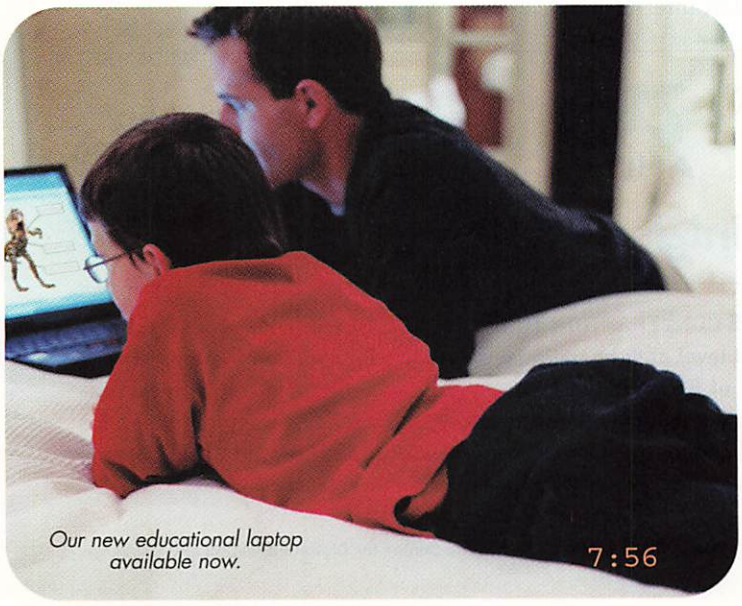

"The computer makes me smarter. It is really fun to learn with a computer."
—Alex

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By Greg Nadeau

THE DIGITAL EDUCATION LEADERSHIP CONVERSATION

LAST ISSUE, THE CONVERSATION INTRODUCED THE IDEA OF UNIVERSAL, INTEROPERABLE, XML-BASED LEARNING OBJECTS. THIS ISSUE FOCUSES MORE NARROWLY ON THE GROWING IMPORTANCE OF ONLINE ASSESSMENT IN LEADING STATES' DEPLOYMENTS OF E-LEARNING PLATFORMS.

WHEN President Bush and Senator Kennedy brokered agreement of the reauthorization of the Elementary and Secondary Education Act (ESEA), No Child Left Behind, they committed our nation to a historic path to transform our K-12 public education system. At the heart of this is the commitment to annually measure student performance in math and English, a burden that falls squarely on the shoulders of 50 states grossly ill-equipped to meet this challenge.

Put simply, most states cannot ensure that no child is left behind, since they don't even know where each child goes to school—let alone whether the student is ahead or behind of learning standards. Increased federal funds to assist states in implementing new assessment requirements cover a fraction of traditional statewide paper-and-pencil exam implementation costs.

States could leverage the $7-10 billion spent annually on technology infrastructure, deploying online assessments instead, saving tens of millions of dollars and substantially increase the educational value of their assessments.

Paper-and-pencil assessments are expensive and inefficient. They must balance cost, scalability, reliability and validity. Cost and scale tend to be fixed, so states sacrifice assessment validity and authenticity and thereby valid, reliable and repeatable results.

Each fall, when teachers greet their new classes, they have no information from the most recent state test. When they get results, lack of diagnostic information prevents them from prescribing appropriate remedial support. Existing, affordable, Web-based technologies can change all this.

Online assessments, drawing from pools of shared released items from previous assessments, could help states meet ESEA requirements with embedded, diagnostic assessments mixing multiple-choice, open-ended and classroom-based results into a comprehensive class and student profile.

Collaborative item development tools with item-response theory analysis can enable teachers to create large pools of validated items. Align-to-Achieve's (A2A) classification intermediary can enable states to share items between diverse curriculum standards. Computer Adaptive Testing (CAT) can dramatically reduce needed questions each student needs to get diagnostic information by varying difficulty and content of upcoming questions based on previous results. Trained expert systems can grade writing samples to scoring rubrics more accurately than human graders, providing students instant feedback.

The time has come for technology to move from the margins into the center of the educational experience. New ESEA assessment requirements will force many states to embrace online assessment platforms to reduce costs. Education technology advocates should embrace this opportunity. ■

Next issue: Individualized Education

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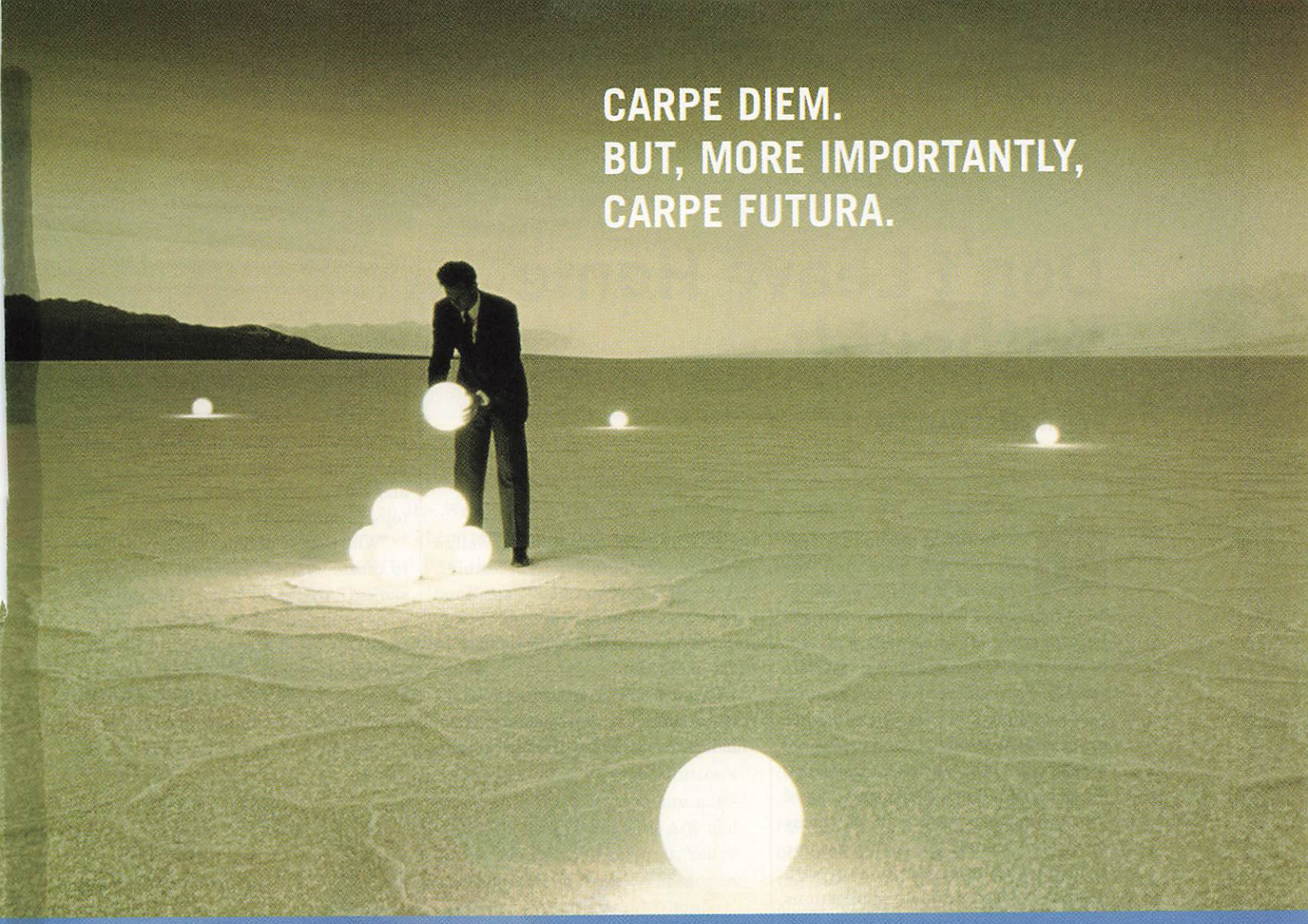
IN MARCH, THE CONVERSATION TOOK UP THE ISSUE of educational technology at the federal level and the national enterprise information system with the U.S. Department of Education in a special public conference call with our nation's top two education technology officials — John Bailey, director of the office of education technology U.S. Department of Education (ED) and Craig Luigart, chief information officer, ED. Join in online <*www.convergemag.com/dele*>.

The Conversation is a joint project of the Center for Digital Education and *Converge*.



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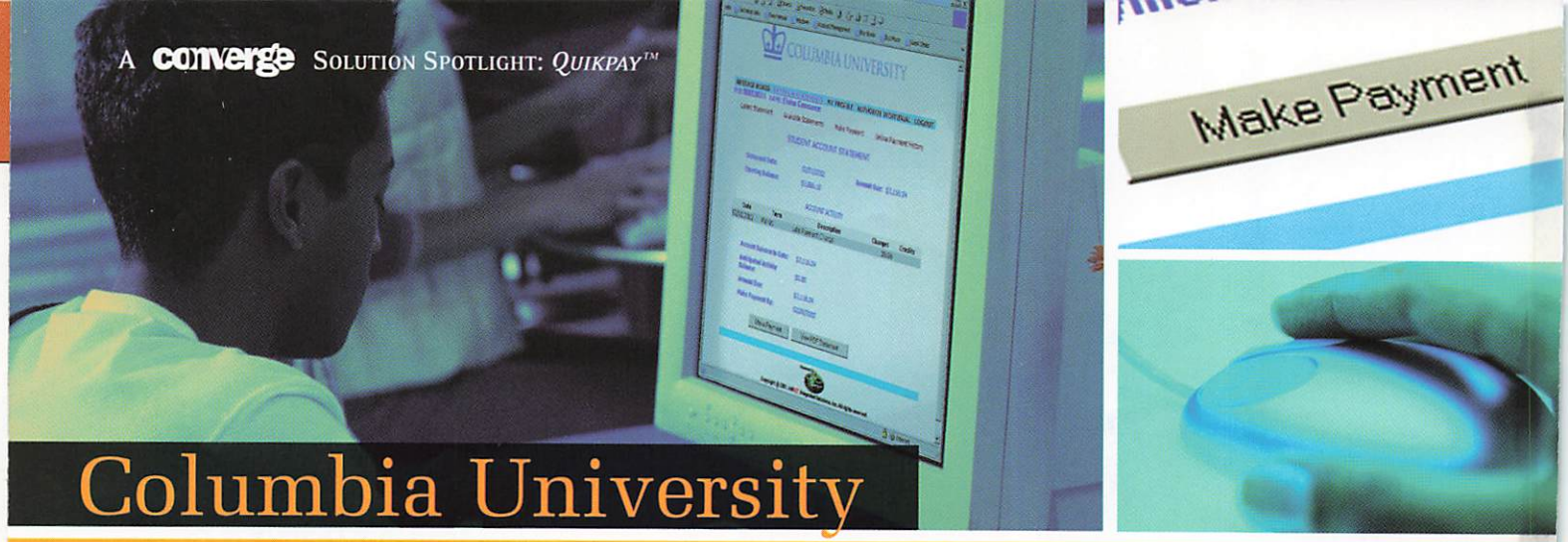

Columbia University Moves Into the Future With *QuikPAY™*

By Emmett Jones, Converge *magazine*

Today, a new revolution is underway.

Columbia University was founded in 1754 as King's College by royal charter of King George II of England. New York's oldest higher education institution, it's the fifth oldest in the United States. In its early history, the institution weathered tough times with the American Revolution, only to emerge stronger, more economically diverse and more robust.

Today, a new revolution is underway, one that is revitalizing old ways of doing business and forging ahead to provide a new level of freedom.

This revolution involves *QuikPAY™*, which is a fully integrated electronic payment, bill and commerce solution. In the first two weeks *QuikPAY™* was made available to Columbia's constituents, and before marketing of the service had even begun, users had set up payment profiles and processed over $1 million in transactions. The system was online in time for the fall billing cycle, allowing Columbia's staff to readily assist all students.

This little revolution took a small, dedicated team of technical and business knowledge experts. Led by Jim Tilton, Executive Director for Student Financial Services at Columbia University, they understood the new context in which they were working.

"Forty-eight or 24 hours used to be a reasonable expectation to research a student account statement file, return phone calls and provide information. That has completely changed. People want things instantly," said Tilton.

But a little revolution goes a long way. "We were making a major policy change at the university. It had to do with how students were able to pay their student account statements," said Tilton. "We wanted a service that could actually send out and fulfill our 250,000 statements per year."

And harkening back to its historical diversity, international students represent approximately 21 percent of Columbia's enrollment, which makes *QuikPAY™* an even more valuable tool. By logging into the *QuikPAY™* system, international students could view and pay their bill online, or Columbia's financial services team could assist those overseas who had not yet received their invoices, effectively spreading a new freedom instantaneously – across the entire globe.

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"We wanted to have every statement be available to students, and a history of every

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project-based learning to a new threshold. The teacher, as part of the PAN, can provide guidance and counseling to the students as they collaborate.

We are indeed getting closer to my oft-described handheld, super fast, infinite storage and applications, voice-driven and *wireless* appliance for Everyman.

AND IN THE REAL WORLD

Mr. Lorion enthusiastically described the first schoolwide adoption of a handheld, "This (Forsyth Country Day School) is the first time that a K-12 school in the United States has mandated the use of handheld technology in its school and has made the commitment to use it in a range of academic and administrative areas. These include math, science, foreign language, English, grading and assessment."

Eric Peterson <*ericpeterson@fcds.org*>, assistant headmaster, introduced the handhelds in a pilot study last year. He used Palms extensively in his British literature classes; students took notes, wrote papers and viewed e-texts of literary works downloaded from the Palm Digital Media Web site. Mr. Peterson used his to record grades, attendance and lecture notes; he also distributed quizzes via infrared beaming ...

LIKE DESKTOP MACHINES, HANDHELD DEVICES HAD TO SHED THE IMAGE OF BEING A GAME MACHINE, AND CERTAINLY THEY HAVE SUCCESSFULLY DONE THAT.

By the way, he is also the football coach. "During a game, we could chart our opponents' tendencies and play calling patterns in real time, allowing us to make better adjustments during the game itself." Now how cool is that? Gee, I wonder if the coach on the *other* sideline thought about intercepting the signals and adjusting *his* play calling accordingly?

The school's plan includes integrating handhelds into its intranet to use for e-mails, syncing assignments, and connecting school and individual Web sites. Of course, kids will be able to gather all sorts of information for classes via the Web. For the longer range, the school plans to distribute e-texts and course materials on secure digital cards that will deliver applications, content, data storage and backup, images, video clips and more — all on a card the size of a postage stamp! There is more, but I am sure you can fill in the blanks.

As in most emerging hardware solutions, getting developers to supply applications is key. Mr. Lorion related over 500 applications are available right now and the numbers are growing rapidly.

A lifetime in this business can make a guy cynical — you know, smoke and mirrors. So, I sought out someone to provide a view from the county office of education perspective.

PALM READING FROM THE COUNTY OFFICE

Dr. Sheldon Smith is director of technology at the San Luis Obispo County Office of Education, just to the north of Santa Barbara, Calif.

Dr. Smith offered a number of interesting comments on handhelds and feels they definitely have a place in the education environment — he is an enthusiastic user. One of the real goals in the classroom is to make technology transparent. "I have always stated we should not set aside the classics to 'do technology,' but to utilize technology to better teach the classics," he said. "Handhelds are a technology scaled to that use and are much less intrusive and thus can be seamlessly used in the classroom." That word *scaling* appears frequently in discussion of handhelds in the education space.

"Computers help teachers become more efficient with the day-to-day classroom work — grades, memos, student information, etc. The problem is that all this information is tied to the teacher's desk. Consider this: utilizing Making the Grade, the teacher can now grade work in the field, enter the grade in the handheld, and when the handheld is synced with the desktop machine, transfer it. Access to student data is similar."

Certain financial benefits accrue as well. "We can send home a $250 device and an $80 keyboard and reap the same benefits if we had sent home a laptop." Dr. Smith goes on to note the robustness of the systems, noting that the displays on laptops are particularly vulnerable.

Finally, the question I did not ask but got answered anyway. "The following are some of the apps I have loaded: Address Plus, AvantGo (*The New York Times* technology section, *Computerworld*, *Wired News*, etc., all updated daily), Mail, Making the Grade, SplashPhoto (Wanna see pictures of my kids?), Documents to Go, EasyLock, etc." Games? "Oh yes ... gotta do something during meetings."

JURY IS IN

Handhelds got a lot of shelf space during the shopping season. In fact, I could not get to the counter to ask a couple of questions at my local CompUSA. These buyers were not all teachers, to be sure; but the message is pretty clear: these devices are here to stay. Next time, my impressions of Macworld and the Pied Piper of Cupertino.

FOOTNOTE

Harrius Figulus will soon be seeking the *Lapis Philosophi*. All in immaculate Latin. J. K. Rowling, author of the Harry Potter adventures, has authorized the publication of "*Harry Potter and the Sorcerer's Stone*" in Latin and ancient (Homeric) Greek. Outstanding! (Wish I could say I was responsible.) ■

F. Robert Walczak <*bobwalczak@cue.org*> is executive director for Computer-Using Educators (CUE), and has been involved in education technology for 35 years.

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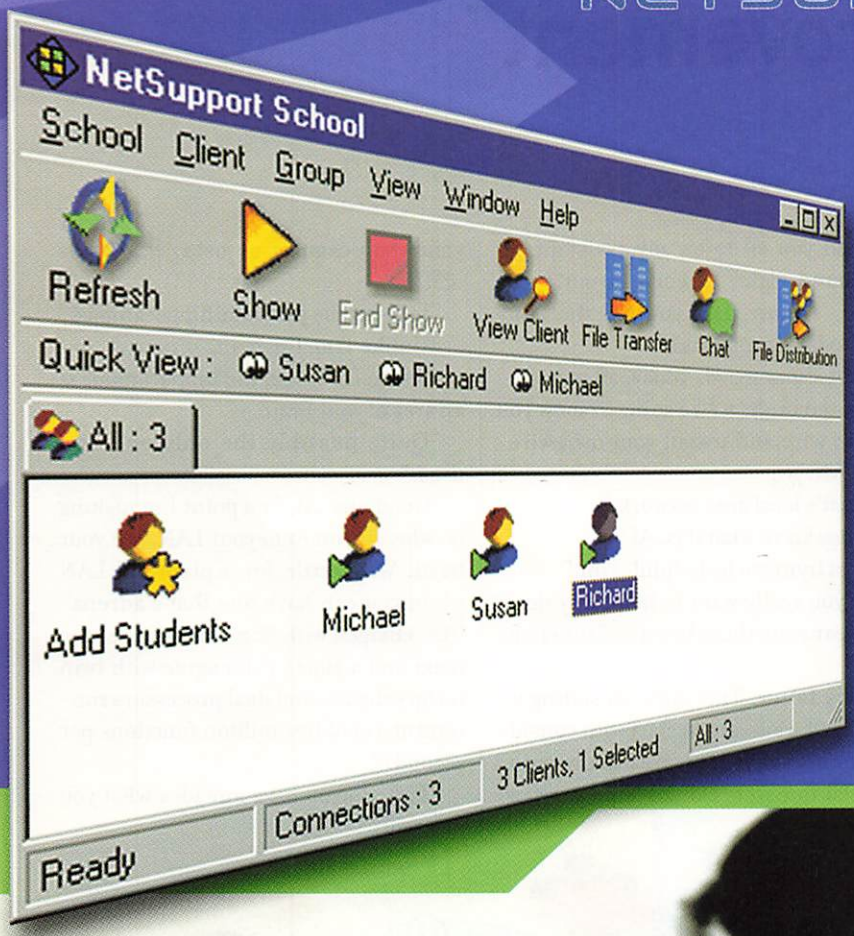

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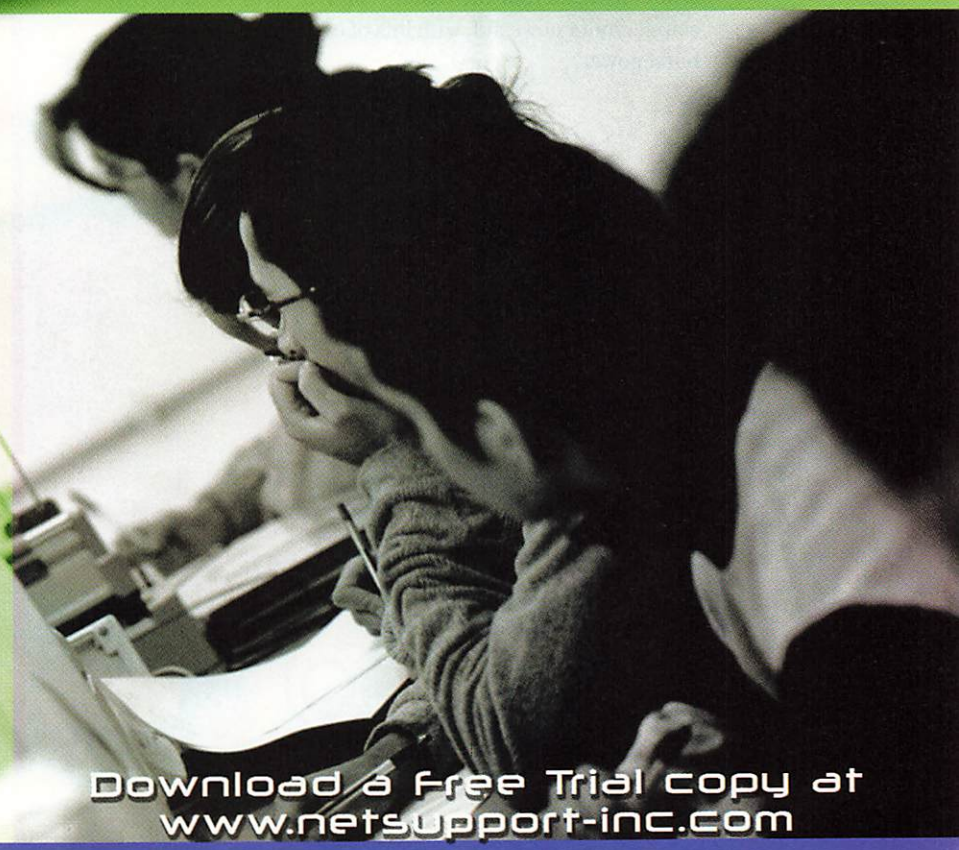

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Tonight's Episode of "School Improvement"

BY LOU FOURNIER

"Does everybody know what time it is?"

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"That's right, and now here's the host of *'Tech Time'* — Tim Talon!"

"Thank you, Lisa, and thanks to all of you in the studio and watching at home. Yes, it's time again for everybody's favorite school improvement TV show *'Tech Time,'* where we bring you the latest and greatest in educational technology. Why, if one were writing a humor column on this topic for an education technology magazine, one could say it was all about the Joy of Technology! Here at *'Tech Time,'* we bring you technology projects you can do right in your own school to make your life easier — and, of course, more powerful, with lots of extra horsepower.

"And you all know my assistant, Al Moribund, right? Al, come on out!"

"Hi, Timmy. Did you tell the folks what today's project is?"

"Just about to, Al. Today, all you educators out there, we're going to show you how to wire and install your own wireless LAN."

"That's local area network."

"They know what it is, Al."

"Just trying to be helpful, Tim."

"If you really want to help, why don't you wear something besides flannel one day?"

"Very funny, Tim. Now, in setting up your LAN, you want to start with considering how much of an area you're going to need to cover. Do you want to reach your whole campus, or just a certain area of it?"

"Like maybe just your hippocampus."

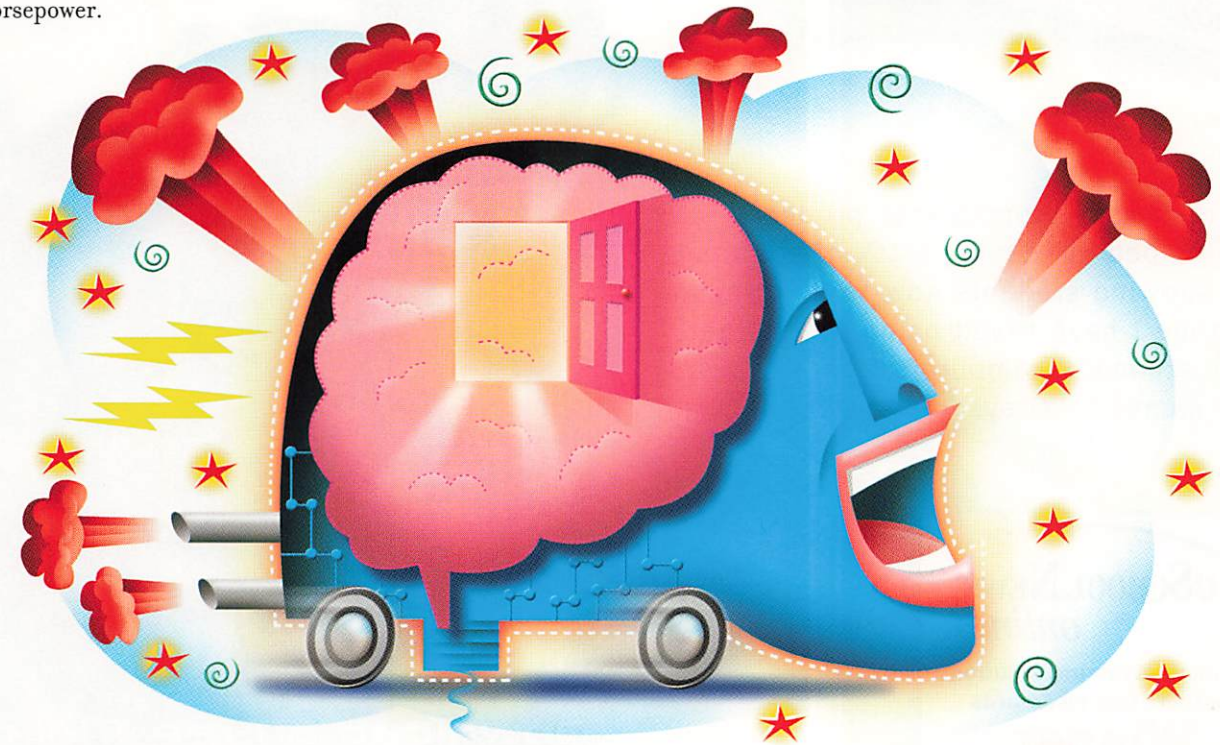
"Unlike Tim, I'm being serious."

"So am I, Al. See, the hippocampus is an area of your brain —"

"Quite possibly the only one Tim uses."

"Good one, Al. The point I'm making is, when it comes to your LAN, use your head. Why settle for a plain old LAN when you can have one that's adrenaline-charged with 800 horses under the hood and a super V-8 engine with twin turbo exhausts and dual processors running at a cool five million functions per second?"

"Tim, do you have any idea what you just said?"



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"I don't have to, Al. I just rattle off the features; I don't have to make it work. That's why I have an assistant, like you."

"Yep. Sounds just like a school system, all right."

"But actually, I do know how to beef up technology — that's what I live for. And what Al doesn't know is that I went back to the school where he just installed a nice little LAN and tweaked it a tad."

"WHERE'S YOUR SPIRIT OF INNOVATION, OF FORGING ON, OF DAMN-THE-MANUAL-FULL-SPEED-AHEAD?"

"What? You messed with my nice little LAN?"

"No, Al, I tweaked it. It was all pretty and safe and did what it was supposed to. I have two words to describe that: *bor-ing*."

"And I have three words to describe what happens when you tweak things, especially 'just a tad': *hos-pit-al*."

"And you call yourself a tech tool man! Where's your spirit of innovation, of forging on, of damn-the-manual-full-speed-ahead? Anyway, it's already done, and I think we're going to be very pleasantly surprised with the result."

"I think I'd better call my mother and tell her to leave the city."

"Well, let's start this puppy up. Al, why don't you just push that button right there."

"I don't think so, Tim."

"This is where a leader has to step in. Now, watch your screen when I push this button, and you'll see the school light up with the glow of connectivity. And ... *now*!"

"Wow. Would you look at that. I have to hand it to you, Tim. The school did indeed light up. Now, will that glow start to peel the paint after a while? And is there any radioactivity danger here? And are you supposed to be able to see through the walls like that?"

"All progress has occasional setbacks, Al. Well, the kids will be pleased while the school's closed, anyway."

"With all that extra light, I guess you could say you've successfully extended the school day."

"Got your point, Al, and a darned funny one it is. Let's move on to another project. Now, everybody knows that the most cherished institution in the cherished institution of education is standardized testing."

"That's what all the kids are saying."

"Well, we here at *'Tech Time'* have developed a cool new way to do standardized testing."

"Who is this 'we' you speak of?"

"You ended that sentence with a preposition, there, Al. Remember what Churchill said about that rule: 'This is something up with which I will not put.'"

"Didn't he say that about standardized testing, too?"

"Sure didn't, Al. Now, we all know that the challenge with standardized testing is making sure every school gets high enough scores so that the principal doesn't get fired."

"Well, that and the fact that it changes the focus from real learning to administrator job security."

"Let's not nitpick, Al. So we've developed a technology that absolutely guarantees high test scores! Working closely with the people at the largest online service in the U.S. — yes, I'm talking about AWOL — we've come up with an automated e-mail system that does e-mail automatically."

"Hence the term 'automated e-mail'?"

"You're a quick study, Al. Now, all of you at home are wondering what automated e-mail has to do with standardized testing."

"And what else is on TV right now."

"What we and AWOL have done is created homework e-mail that gets sent automatically to every student in America who has a standardized test coming up! But wait, there's more! Every e-mail comes packed with all the information any student would need to ace any test! It's fun, it's easy, and I've tweaked it so that it elbows all your other useless e-mail, like any from family and friends, out of the way!"

"That's really exciting, Tim."

"Now you're in the spirit, Al."

"What you don't know, though, Tim, is that the other 'we' here at *'Tech Time'* have known about your automated e-mail plan for some time, and we've developed an effective antidote to it before it even gets started."

"What?"

"Well put, Timmy. Our software intercepts your automated e-mail and instantly replies to it, without the original e-mail ever hitting a target computer."

"Is that so?"

"It is. Would you like to know what gets sent back to the people sending all this automated homework e-mail?"

"Not really, Al."

"Country music song titles."

"You're pulling my leg."

"That's not one of the songs, Tim, but that's a good effort. No, I'm talking about timeless classics such as, *'At the Gas Station of Love, I Got the Self-Service Pump.'*"

"You're kidding."

"I'd never kid about anything this serious, Tim. These are actual, real country song titles. Like *'My Wife Ran off With My Best Friend, and I Sure Do Miss Him.'* And *'How Come Your Dog Don't Bite Nobody but Me?'*"

"How can you do this, Al?"

"Then there's my personal favorite: *'You're the Reason Our Kids Are So Ugly.'*"

"You're knocking some serious work here, Al."

"No, I'm not. Through this we're celebrating the creativity of American country songwriters."

"I was talking about standardized testing. Well, that's our show for this week, folks. Keep studying, kids!"

"Keep writing new songs, kids!" ■

LouFournier <louphonia@earthlink.net> is an associate of the prestigious Thornburg Center for Professional Development <www.tcpd.org>. He consults and presents on a wide range of educational issues.

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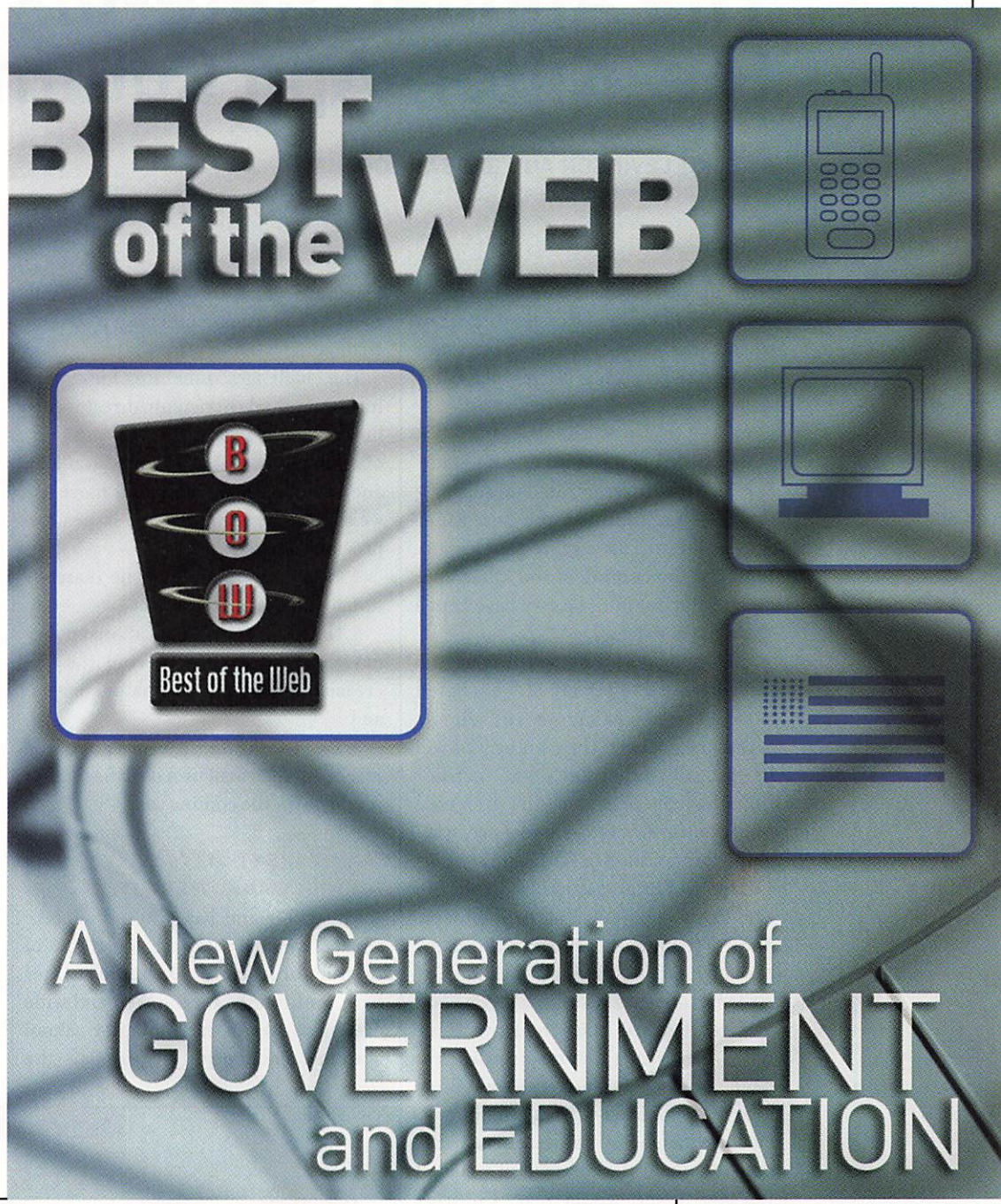

On March 19, 2002 the Center for Digital Government, *Government Technology* magazine and *Converge* magazine issued a **CALL FOR ENTRIES** to all state and local government offices and K-12 and higher education institutions.

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B
O
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Best of the Web

The Annual State-of-the-Killer-App Column

BY ELIOT LEVINSON AND BARBARA GROHE

Is this the year to purchase an instructional manager? Have these Web-based systems reached the point of development where they are good enough to buy for your school system?

This is the third annual State-of-Instructional-Managers Column, aka the Edu-Killer App Column. Three years ago, we announced the coming of the killer app, and for the last few years we have kept a vigil on its progress.

The last year has witnessed the growing use of a variety of Web-based instructional managers in schools across the country. The coming year will be critically important as the instructional managers become the preferred platform for educators using accountability programs. And as school systems initiate the implementation of the No Child Left Behind Act, superintendents and curriculum directors will in many cases be betting the farm on their instructional manager.

Why? Because they integrate three types of curricula that historically have been very loosely coupled – the school system's published curriculum, the curriculum taught by the teacher in the classroom and the curriculum tested at the end of the school year. Unfortunately, these three curricula often bear little resemblance to one another.

The beauty of the instructional manager is that it uses the Web to essentially integrate what used to be separate: The district's planned standards-based curriculum is linked to instructional materials, which are taught in the classroom by the teacher and then tested on an ongoing basis.

The challenges remaining for superintendents and curriculum directors are how to decide among the growing array of instructional managers now available and when to make the fateful move. As we see it, attention to three issues can provide guidance:

- The current state of the instructional management products;
- The nature of the educational policy environment that is driving the increased use of instructional managers; and
- Predictions on the evolution of the market and instructional management products for the coming year.

THE CURRENT STATE OF INSTRUCTIONAL MANAGERS

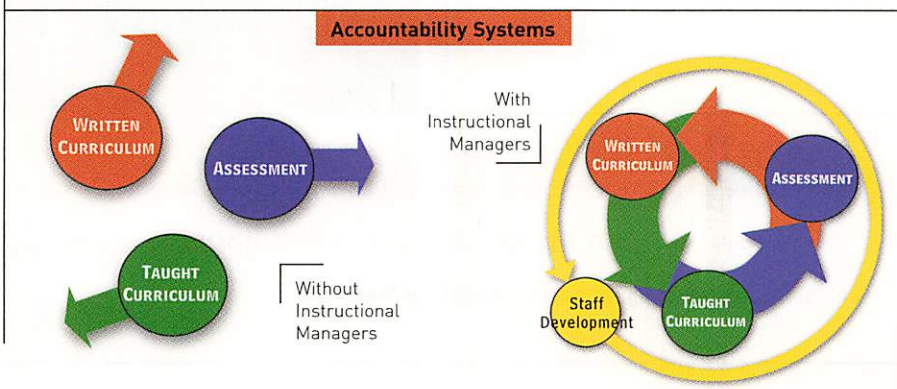
The killer app has entered adolescence. Over the past year, a plethora of instructional manager brand names have proliferated on the Web and wide area networks of early adopter school systems. Though full of promise, the products are not yet fully developed. The majority of the killer apps address one or two of a district's demands for curriculum planning, delivery of instructional materials and assessment. At the moment, only a small number of products do it all. As yet, there also is no defined product standard or dominant product.

Name brands. There are a dozen or so brands that have gained name recognition in the past year and are still functioning: Classwell, SchoolNet, Net - Schools, Microsoft Encarta Class Server, Teachers Pal, CELT Corporation's Learning Synergy, EDmin, LearnCity, Riverdeep LMS, Lightspan, NCS Learn and Plato.

Main strengths. The current instructional managers are good teacher support products. The majority of them act as desktop-based lesson planners, grade books and curriculum organizers.

Flavors. Instructional managers are offered in several flavors:

Instructional Platforms. The majority of the products are platforms that allow districts to input their own curriculum



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and align them to Web-based academic standards.

High-quality instructional materials linked to standards. Only a small number of the managers have developed high-quality instructional materials linked to standards. The instructional material products tend to have good teacher desktop interfaces and provide instructional materials in the four core K-12 subjects.

Assessment products. A few of the products focus on assessment rather than curriculum planning and delivery. These products provide ongoing assessment linked to standards and management information on standards-based test performance.

Key consideration. As mentioned earlier, many of the instructional managers provide only two of the three functions, i.e. curriculum planning and assessment or instructional materials aligned to standards and curriculum planning. The majority of the products at this time are classified as "partial products."

Costs and development. Some school systems are not convinced that the commercial products merit the cost of purchase yet and have decided instead to develop their own instructional managers. These include such districts as Oswego, N.Y.; Kent, Wash.; and Poway, Calif. The districts that fall into this category have been leaders in technology use and development for at least the last five years. Our hunch is that within the next year, instructional managers should be robust enough so that very few if any districts feel the need to develop their own instructional manager. What else do we predict?

NATURE OF EDUCATION POLICY AND PREDICTIONS FOR THE COMING YEAR

Activities of the coming year will be driven by the interaction of three factors: the maturation and development of the instructional management products; implementation of the No Child Left Behind law; and marketplace consolidation.

The new No Child Left Behind law will help drive the rapid implementation of instructional managers in about 10-15 percent of the 16,250 American school systems in the coming year. The new law provides school districts with both the motivation and funding to acquire an instructional manager. The law's requirements to test annually, using criterion-referenced tests, and to track instructional improvement make it incumbent on schools to gather and analyze assessment data, and to align curriculum to standards. Districts will find it very difficult to implement accountability without using instructional managers. By 2005, when the testing provision of the Elementary and Secondary Education Act takes full effect, more than 50 percent of school systems will be utilizing instructional managers.

Other factors that will drive up sales will be the ongoing work of established sales forces and the maturation of products.

The coming year will bring a wave of consolidation among the firms which produce instructional managers. In the coming months, the instructional technology vendors will play Pac-Man with each other: Larger vendors will buy smaller ones; products with only instructional platforms will merge with products that have rich instructional material; and products that have assessment will purchase products that have planning. The bottom line is that by year's end there will be five or six robust instructional manager products with three integrated components:

- A planning component that sequences standards-based instruction and aligns curriculum to standards;
- An open-system instructional delivery component that links third-party software to standards in each state; and
- An assessment component that provides ongoing Web-based assessment linked to standards.

There will be two new sets of players in the instructional manager market: the big publishing companies searching for platforms to deliver their standards-based instructional materials, and the old Integrated Learning Systems (ILS) companies retooling their products to be Web-based instructional managers. The educational print publishers have already consolidated and they will be looking for instructional platforms to distribute their rapidly digitizing material. The ILS players are retooling their obsolescent proprietary instructional managers into open system, Web-based products.

WHAT'S MISSING?

Staff development will not be integrated into the instructional solutions for another two years. Administrators will tell you that their biggest challenges are attracting, retaining and developing teachers. However, it is unknown exactly what makes for effective professional development. It will take additional time to integrate professional development into the killer apps.

FINAL THOUGHTS

Yes, this is the year to consider purchasing an instructional manager. The instructional managers are reaching the point that they are becoming killer apps. They are becoming robust, they integrate the planned, taught and tested curriculum, and they address accountability. It will take one more year for the products to become fully mature. You could wait one more year for the fully done product, but the current products will add significant value to your accountability efforts. ■

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Barbara Grohe <bgrohe@kent.wednet.edu> is superintendent of Kent School District (Wash.) and was named 1998 National School Superintendent of the Year by the American Association of School Administrators.

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The New King

BY KENNETH C. GREEN

The king is dead; long live the king.

Remember the Internet economy? Despite the musings of pundits who claim it has died, the Internet economy is still with us. Admittedly, it has become smaller and presumably much humbler given the demise of the dot-coms over the past 18 months. Yet they continue to cast a long shadow.

The underlying premise of the Internet economy was the quest for the *killer app* — the one new product, software application, or Web-based service that just might change the world. Amazon.com, Webvan and Napster are prominent examples of companies that used the Web to challenge conventional wisdom — business plans that sought to change the world. Some have succeeded (or will): Amazon finally reported a quarterly profit in January 2002. Many dots died quiet deaths, while others became spectacular failures.

DESPITE THE MUSINGS OF PUNDITS WHO CLAIM IT HAS DIED, THE INTERNET ECONOMY IS STILL WITH US.

The primary Internet-economy mantra was that "the Internet changes everything." Now we know better. While the Internet admittedly changes many things, it doesn't change the need to make a profit at the end of the fiscal quarter.

The second mantra of the Internet Economy was that "content is king." The delivered wisdom was that stuff — *content* — matters, and that the Web is an enabling repository for stuff — *lots* of content.

A second component of the *content-is-king* scenario: The Internet would transform publishing from a manufacturing business — pouring content into books, magazines, CDs and DVDs — into a distribution business. The Web promised to extract all the manufacturing costs that added little value to content — costs such as printing books and pressing CDs, plus costs of shipping products from warehouses to stores. In the end, consumers would have content at their convenience, content at lower cost, content beyond their wildest dreams.

Content as king has been a particularly motivating notion in education. Across all levels and sectors, educators have been excited about the possibilities of digital access and content: the Internet would remove geographical barriers to provide access to libraries, archives, images, museums, data bases and more, thus expanding learning resources and providing unique opportunities for engagement for students of all ages.

Conversations with textbook publishers — the traditional providers of instructional content in K-12 and higher education — reveal both their excitement and concern about Web-based distribution. Textbook publishers, like their music-industry counterparts, know how to make money on manufactured content. However, the proven, profitable business plan for digital distribution — for textbooks and for music — is still developing.

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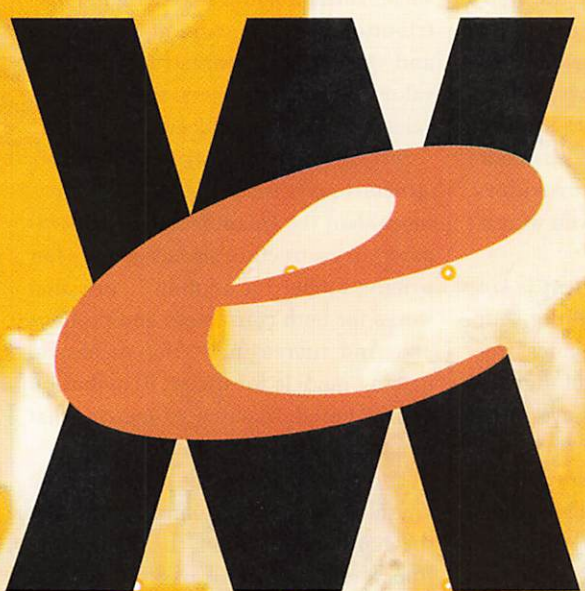

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Yet the evidence regarding Web-based digital content — *content as king* — suggests that the old king is dead.

What about Napster — pure digital content, and incredibly successful, right? *Wrong!* Don't confuse popularity with success!

Content is king requires that digital distribution work well for both user/consumer and for the content supplier. Obviously Napster worked well for users: Napster made the Web a digital jukebox offering everything from Beethoven, Tony Bennett and The Beatles to the Backstreet Boys, Britney and Blink-182 — all for free! But where Napster was great for users, it wasn't viable for most content providers, specifically the musicians who weren't paid for their work.

A second interesting *content is king* case study is Project Gutenberg <*http://promo.net/pg*>, which provides free, online access to thousands of digitized books. All Gutenberg titles are in the public domain. As stated on its home page site, Gutenberg "cannot publish any texts still in copyright. This generally means that our texts are taken from books published pre-1923 ... So you won't find the latest bestsellers or modern computer books here. You *will* find the classic books from the start of this century and previous centuries, from authors like Shakespeare, Poe, Dante, as well as well-loved favorites like the Sherlock Holmes stories by Sir Arthur Conan Doyle, the Tarzan and Mars books of Edgar Rice Burroughs, Alice's adventures in Wonderland as told by Lewis Carroll, and thousands of others." Indeed, large parts of the Gutenberg archives look like the Penguin paperback titles routinely read for many high-school and college courses.

Gutenberg is a good example of the "post-it-and-they-will-come" model of Web content. It is supported by volunteers who share a commitment to digital access and dissemination.

Yet there's little evidence that large numbers of cost-conscious college students, who overwhelmed campus networks downloading music using Napster, are surfing the Gutenberg Web site to download free books that are required reading in their courses and seminars.

What do we learn from this experience? The old king (content) is dead. All hail the new king: *infrastructure*.

Make no mistake: infrastructure adds value. Infrastructure makes digital distribution work for content consumers and producers; infrastructure adds value for content users and provides value for content producers.

Infrastructure as king provides both structure and *gestalt*: the (digital) sum is more than the (manufactured/printed) parts. Infrastructure also provides a fair pricing model for content — one that works for both consumers and producers. And increasingly, the successful pricing models for digital distribution appear based on payment metrics that emphasize dimes, not dollars.

Two good case studies document the arrival of the new king *infrastructure*. For the general population, there's the online version of *The Wall Street Journal* <*www.wsj.com*>. More than 625,000 individuals pay for access to the online *WSJ*. The yearly subscription fee is fairly modest — $29 annually (or about 56 cents/week), for subscribers of the daily print edition.

The online *WSJ* provides much more than simple access to a digital version of the nation's daily financial newspaper. In addition to articles and archives, the online *WSJ* provides additional resources and services not found in the print edition. In other words, the online *WSJ* provides an *infrastructure* that adds significant value to the content found in the printed product — and charges a fair price for the additional access and services.

For those interested in education, the *infrastructure is king* strategy is reflected in the online degree program of the University of Phoenix <*www.phoenix.edu*>. Phoenix is the largest degree-granting institution in the United States: enrollment in its classroom-based and online programs totals some 103,000 students. In 1999, Phoenix ranked fifth among U.S. colleges in the number of bachelor's degrees awarded and first for the number of master's degrees. Phoenix Online currently enrolls about 29,000 students, which places it among the 30 largest colleges and universities in the United States.

A well-designed electronic infrastructure makes Phoenix Online work. Everything — syllabi, course content, assessment, registration, administrative services, and interaction with students and faculty — happens on the Web. As Phoenix Online promises students that "100% of [the] curriculum can be completed via the Internet," Phoenix has invested heavily to ensure that the infrastructure works — 24-7, thousands of Web-based transactions and interactions each day. The success of this strategy is reflected in rising enrollments.

So let us acknowledge the new king and recognize that the reign of Infrastructure offers great promise and opportunity. Admittedly, not all in the kingdom will be happy about the transition from Content to Infrastructure. Some will miss the openness and absence of structure (and user costs) associated with the reign of Content. But the long-term interests of the Internet community, and the education community in particular, are aligned with Infrastructure and dependent on the added value, structure and continuing investment that Infrastructure brings to Content.

The king is dead; long live the king. ■

Kenneth C. Green <*cgreen@campuscomputing.net*>, visiting scholar at the Claremont Graduate University, is the director of the Campus Computing Project <*www.campuscomputing.net*>.

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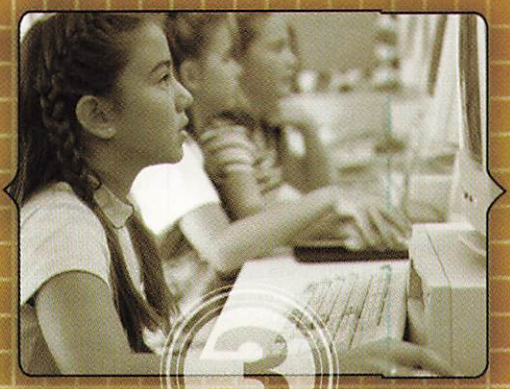

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Fall 2002
San Francisco, CA

Texas Education Executive Leadership Forum
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Miami-Dade: Education Technology Leadership Forum *Tentative*
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Boston Education Technology Leadership Forum #2: LINC to the Future *Tentative*
(Produced in conjunction with the City of Boston and Boston Public Schools)
October/November 2002
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The Digital Education Leadership "Conversation"
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April 25-28
The 5th Annual Conference on Urban Education and 15th Annual Conference for Students At-Risk: Challenging Learners with Untapped Potential
National School Conference Institute
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June 18
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Minneapolis
<www.teachingonthenet.org/conference>

June 24-29
ED-MEDIA 2002
World Conference on Educational Multimedia, Hypermedia & Telecommunications
Denver
<www.aace.org/conf/edmedia/default.htm>

July 24-26
Education Technology 2002
4th Conference and Exposition
Arlington, Va.
<www.salt.org>

August 14-16
18th Annual Conference on Distance Teaching & Learning
Madison, Wis.
<www.uwex.edu/disted/conference>

California Educational Technology Forums:

April 29 – Hayward
May 23 – Los Angeles
May 30 – Fresno
June 7 – Sacramento
<www.convergemag.com/events/conference.phtml?confid=51>

Editor's Note: To post upcoming events and other calendar or grant items, please send the information to:
Olga Amador, Managing Editor, *Converge* magazine
100 Blue Ravine Road, Folsom, CA 95630,
e-mail *oamador@convergemag.com*,
or visit *www.convergemag.com/events/cal_request.phtml*

grantsandfunding

The Pew Charitable Trusts Education program seeks to raise the performance of students at all levels of education, especially their capabilities to learn for understanding and to acquire the literacies they need for productive employment and effective citizenship in an increasingly complex society.

After reviewing the guidelines and other information, applicants should submit a brief letter of inquiry. Proposals are accepted year-round and are reviewed on a rolling basis. If a proposal is considered appropriate for board review, it will be slated for the next available opening on a board agenda. Guidelines for the full application process can be viewed at *<www.pewtrusts.com>*.

The AOL Time Warner Foundation is dedicated to using the power of media, communications and information technology to serve the public interest and strengthen society.

However, rather than simply providing grant monies or funding unsolicited requests, the foundation prefers to enter into sustainable strategic partnerships with organizations that have a demonstrated commitment to pioneering innovative ways of meeting its four priorities: equipping kids for the 21st century; extending Internet benefits to all; engaging communities in the arts; and empowering citizens and civic participation. No deadlines; ongoing review process.
For more information, visit: *<www.aoltimewarnerfoundation.org/grants/grants.html>*.

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